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OF THE

BOARD OF HEALTH.

1889.

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EIGHTEENTH ANNUAL REPORT

OF THE

BOARD OF HEALTH

OF THE

CITY OF BOSTON,

For the Year 1889.

BOSTON:
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CITY OF BOSTON.

EIGHTEENTH ANNUAL REPORT

OF THE

BOARD OF HEALTH

OF THE

CITY OF BOSTON,

FOR THE YEAR 1889.

BOARD OF HEALTH,
12 BEACON STREET, BOSTON, Jan. 1, 1890.

To the Honorable the Mayor and the City Council: —

The Board of Health respectfully submits its eighteenth annual report, covering the work of this department for the year 1889.

The deaths during the year numbered 10,259, compared with 10,197 in 1888, making the death-rate for the year 24.42, reckoning the present population of the city at 420,000. This is a high rate, but it is necessary to analyze the list of deaths and their causes in order to see how far sanitary administration can be held responsible for this record.

Of the 10,259 deaths during the year, it will be seen by the tables that but 1,968 are due to causes which are generally classed under the head of preventable diseases. That is to say, 19.18 per cent. of the total deaths were from zymotic diseases, while 80.82 per cent. were from other causes.

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There were 1,431 deaths from consumption, 938 from pneumonia, 448 from bronchitis, and 789 from heart-disease. These, together with the deaths from violent causes, old age, Bright's disease, and cancer, account for nearly one-half the total number of deaths. Of the deaths from preventable causes, diphtheria was the cause of the largest number, there having been 564 deaths from this disease, and 450 from cholera-infantum. The death-rate among children under five years of age was 35.41 per cent., against 35.2 the previous year, but still a comparatively low percentage of the total mortality.

There has been no epidemic in the city during the year, excepting that of influenza, which had become alarmingly prevalent at the close of the year, the deaths for the last week of December exceeding those of any other week of 1889. Although the influenza is not in itself a dangerous disease, the form it assumed left its victims greatly enfeebled and an easy prey to the more dangerous and fatal diseases incident to this season of the year. It is not in any sense a filth disease, and cannot be kept out by quarantine, so that it may be said to be entirely beyond the reach of public health authorities.

Small-pox, from which the city has been almost entirely exempt for a long period, reappeared in October at the North End. An Italian arrived here by way of New York from Italy, and a fortnight subsequent to his arrival five members of his family were found to be suffering from small-pox. A careful investigation gave conclusive evidence that the father had conveyed the disease to his children, he having been afflicted with it on his arrival here. Nine cases followed this one, and there is every reason to believe that they all had their origin in this importation. Nearly all these cases of small-pox were found in crowded tenement-houses. By prompt attention, however, it was prevented from spreading and was soon wholly suppressed.

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Comparative View of Twenty-five of the Principal Causes of Death during the Year 1889.

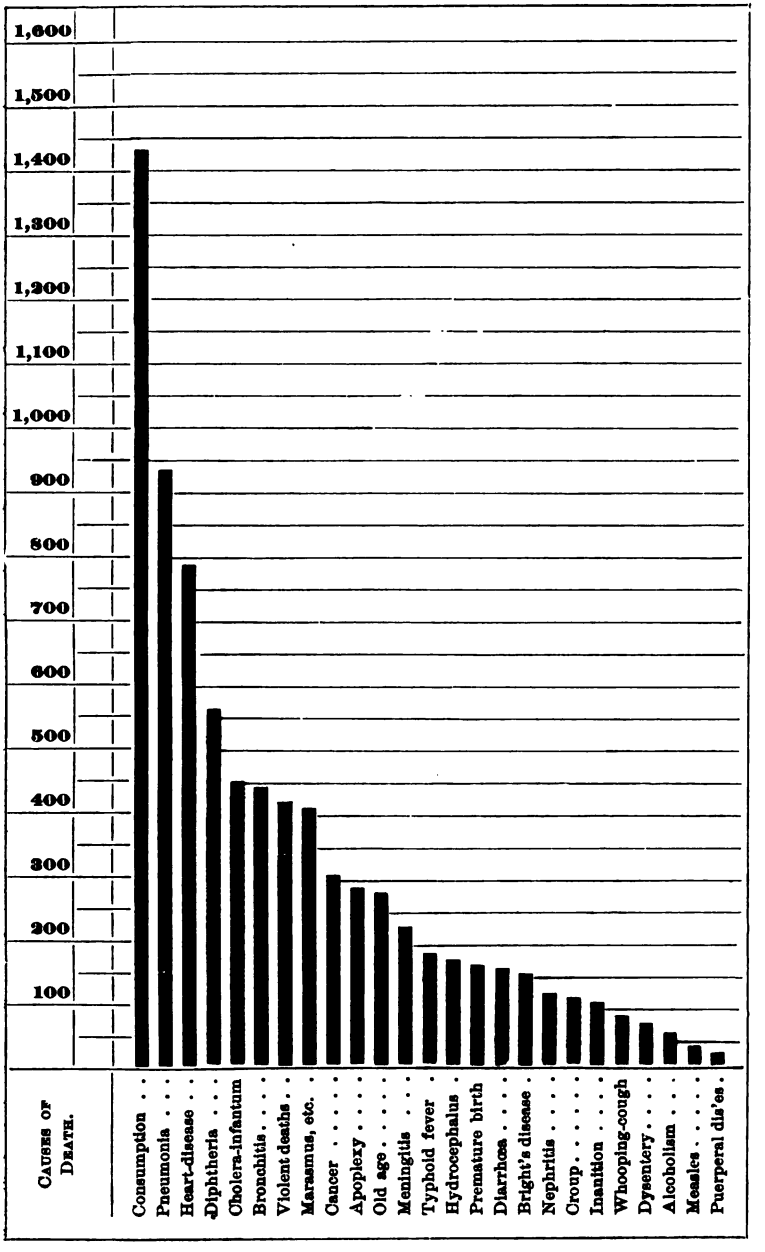

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Table I. — Total of Deaths, Still-births, and Deaths from Zymotic Diseases, for Nineteen Years, with Percentages.

YEARS.	Total Deaths, exclusive of Still-births.	Still-births.	Total Zymotics.	Diphtheria and Croup.	Scarlet Fever.	Typhoid Fever.	Cerebro-Spinal Meningitis.	Whooping Cough.	Measles.	Diarrhœal Diseases.	Small-pox.	Percentage of Zymotic Deaths to Total Mortality.	Rate of Still-births per 1,000 inhabitants.
1871	5,888	543	1,408	128	111	176	3	30	9	756	23	23.91	1.85
1872	8,090	560	2,823	94	258	229	60	52	60	1,006	738	34.89	1.91
1873	7,869	515	2,626	119	474	243	216	33	16	925	302	33.37	1.76
1874	7,812	642	1,899	121	269	202	35	108	41	940	2	24.30	2.19
1875	9,060	541	2,722	631	534	227	41	41	65	989	1	30.02	1.58
1876	8,253	485	2,439	720	458	145	13	59	2	827	2	29.55	1.41
1877	7,316	471	1,890	471	104	156	24	88	2	913	4	25.83	1.37
1878	7,636	441	1,980	569	68	120	19	88	145	816	. .	25.91	1.28
1879	7,398	453	1,935	545	149	119	15	112	2	772	. .	26.15	1.24
1880	8,531	443	2,321	774	33	154	8	94	49	1,003	1	27.20	1.22
1881	9,016	513	2,423	802	35	207	16	77	108	870	6	26.87	1.29
1882	8,995	518	2,276	575	75	212	24	92	25	951	8	25.30	1.26
1883	9,740	504	2,551	608	211	198	23	31	152	1,023	1	26.19	1.17
1884	9,622	503	2,278	487	209	216	26	181	13	855	1	23.67	1.17
1885	9,618	520	1,879	459	156	152	19	26	84	723	2	19.53	1.30
1886	9,268	543	1,644	423	31	135	14	37	36	705	. .	17.73	1.35
1887	10,073	534	1,993	410	195	183	16	82	119	734	. .	19.7	1.33
1888	10,197	552	1,841	589	35	170	19	74	27	669	2	18.05	1.33
1889	10,259	598	1,968	683	23	186	21	96	48	710	2	19.18	1.42

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Table II.—Total Number of Deaths under Five Years, and Five Years and over, for Nineteen Years, with Percentages to the Total Mortality.

YEARS.	Total Deaths.	Five Years and over.	Under Five Years.	PERCENTAGES.	
				Five Years and over.	Under Five Years.
1871	5,888	3,493	2,395	59.33	40.67
1872	8,090	4,676	3,414	57.79	42.21
1873	7,869	4,580	3,289	58.20	41.80
1874	7,812	4,454	3,358	57.01	42.99
1875	9,060	5,088	3,972	56.16	43.84
1876	8,253	4,722	3,531	57.22	42.78
1877	7,316	4,334	2,982	59.24	40.76
1878	7,636	4,630	3,006	60.63	39.37
1879	7,398	4,593	2,805	62.08	37.92
1880	8,531	5,182	3,349	60.74	39.26
1881	9,016	5,702	3,314	63.24	36.76
1882	8,995	5,844	3,151	64.97	35.03
1883	9,740	6,113	3,627	62.76	37.24
1884	9,622	6,052	3,570	62.90	37.10
1885	9,618	6,152	3,466	63.97	36.03
1886	9,268	6,082	3,186	65.63	34.37
1887	10,073	6,411	3,662	63.65	36.35
1888	10,197	6,598	3,599	64.71	35.29
1889	10,259	6,626	3,633	64.59	35.41

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Table III.—Deaths during the Year 1889.

By Sex, Condition, Color, Nativity, Parentage, and Season.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total number of deaths. .	813	750	874	949	838	756	1044	973	837	804	702	919	10,259
Sex :—													
Males	424	369	425	483	436	374	562	510	421	391	337	499	5,231
Females	389	381	449	466	402	382	482	463	416	413	365	420	5,028
Condition :—													
Married	252	233	251	275	265	198	230	228	220	224	217	285	2,878
Single	442	402	512	537	450	453	703	607	514	454	387	488	5,949
Widows	79	78	78	98	80	69	74	91	73	87	67	93	967
Widowers	36	33	24	31	36	31	28	39	22	32	23	42	377
Unknown	4	4	9	8	7	5	9	8	8	7	8	11	88
Color :—													
Whites	786	731	857	928	819	745	1020	957	819	786	681	890	10,019
Colored	27	19	17	21	19	11	24	16	18	18	21	29	240
Nativity :—													
United States	532	494	580	620	539	522	764	648	549	513	443	592	6,796
Ireland	159	162	178	191	167	146	161	200	183	176	149	194	2,066
England	19	11	17	30	22	21	11	19	8	19	14	19	210
Scotland	5	5	4	11	8	5	3	9	7	6	6	7	76
Germany	17	16	9	11	13	6	13	10	15	15	15	18	158
British Provinces	51	25	50	44	53	36	50	56	47	47	43	51	553
Italy	3	3	7	8	3	1	2	2	3	1	2	6	41
Other Countries	17	23	14	15	14	11	25	16	18	12	12	19	196
Unknown	10	11	15	19	19	8	15	13	7	15	18	13	163
Parentage :—													
American	203	180	217	244	213	200	268	213	169	201	159	234	2,501
Irish	285	283	322	353	285	286	331	360	343	290	251	366	3,755
England	22	12	12	22	22	18	17	20	11	22	17	20	215
Scotland	8	8	6	11	9	13	14	16	12	8	6	8	119
Germany	31	21	26	22	24	15	30	34	20	33	23	25	304
British Provinces	35	31	41	49	38	44	73	63	47	42	51	50	564
Italy	19	11	10	22	13	5	8	8	7	10	7	17	137
Other countries	68	60	74	77	69	56	95	77	80	57	47	49	809
Mixed	66	75	82	84	79	67	121	96	83	66	57	72	948
Unknown	76	69	84	65	86	52	87	86	65	75	84	78	907

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Table IV. — Deaths from Principal Zymotic Diseases.

	Total Deaths from each Cause.	Percentage of each Cause to Total Mortality.	Deaths per 1,000 Inhabitants.	Total Deaths per Sex.		Total Deaths per Sex under Five Years.		Total Deaths under Five Years.	Percentage of each Cause under Five Years to Total Mortality.
				M.	F.	M.	F.		
Small-pox	2	.019	.005	1	1	...	1	1	.009
Measles	48	.468	.114	31	17	29	16	45	.439
Scarlatina	23	.224	.055	11	12	7	4	11	.107
Diphtheria	564	5.498	1.342	279	285	176	169	345	3.363
Croup	119	1.160	.283	67	52	55	40	95	.926
Whooping-cough	96	.936	.229	43	53	43	51	94	.916
Typhoid fever	186	1.813	.443	115	71	6	1	7	.068
Erysipelas	24	.234	.057	15	9	6	6	12	.117
Puerperal fever	12	.117	.029	...	12	...	. .	...	....
Carbuncle	2	.019	.005	1	1	...	...	...	....
Dysentery	76	.741	.180	24	52	11	8	19	.185
Diarrhœa	163	1.589	.388	78	85	66	65	131	1.276
Cholera-morbus	22	.214	.052	13	9	1	...	1	.009
Cholera-infantum	450	4.386	1.071	236	214	235	212	447	4.357
Cerebro-spinal fever	21	.205	.050	13	8	9	6	15	.146
Influenza	...	....	...	...	..	...	...	...	....
Remittent fever	...	....	...	..	...	...	...	...	....
Rheumatism	31	.302	.074	14	17	...	...	...	....
Pyæmia	8	.078	.019	5	3	2	...	2	.019
Syphilis, congenital	22	.214	.052	11	11	11	10	21	.205
Syphilis, tertiary	10	.097	.024	5	5	...	..	...	....
Purpura	3	.029	.007	...	3	...	2	2	.019
Alcoholism	62	.604	.148	39	23	...	...	...	....
Septicæmia	18	.175	.043	1	17	...	1	1	.009
Typhus fever	...	....	...	...	...	...	...	...	....
Tonsillitis	1	.009	.002	1	...	...	...	...	....

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Table V. — Yearly Percentages of Principal Zymotic Deaths from 1879 to 1889, inclusive, to Total Mortality.

	1879.	1880.	1881.	1882.	1883	1884.	1885.	1886.	1887.	1888.	1889.
Small-pox	. . .	.011	.066	.088	.010	.010	.020	. . .	. . .	.019	.019
Measles	.027	.574	1.197	.277	1.560	.135	.873	.388	1.181	.264	.468
Scarlatina	2.014	.386	.388	.833	2.166	2.172	1.621	.873	1.935	.637	.224
Diphtheria	5.285	6.892	6.665	5.091	4 568	3.585	3.472	3.549	3.137	4.609	5.498
Croup	2.081	2.180	2.229	1.800	1.673	1.475	1.299	1.014	.933	1.167	1.160
Whooping-cough,	1.513	1.101	.854	1.022	.318	1.881	.270	.399	.814	.725	.936
Typhoid fever . .	1.608	1.804	2.295	2.356	2.032	2.245	1.580	1.456	1.816	1.667	1.813
Erysipelas	.527	.281	.465	.444	.431	.448	.415	.420	.337	.402	.234
Puerperal fever .	.351	.726	.754	.833	.728	.467	.207	.183	.228	.176	.117
Carbuncle	.027	.035	.055	.044	.020	.031	.072	.032	. . .	. . .	.019
Dysentery	1.365	1.488	1.064	.922	.903	.633	.644	.658	.585	.470	.741
Diarrhœa	2.487	2.056	2.606	2.568	2.731	2.286	1.767	1.855	1.578	1.510	1.589
Cholera-morbus .	.351	.445	.177	.511	.246	.509	.319	.302	.258	.264	.214
Cholera-infantum,	5.117	6.071	4.924	5.625	5.574	5.372	4.793	4.790	4.894	4.314	4.386
Cerebro - spinal fever	.202	.105	.177	.266	.236	.270	.197	.151	.158	.186	.205
Intermittent fever,	.013	.058	.033	.022	.010	.010	.031	. . .	. . .	.009	. . .
Remittent fever .	.081	.082	.044	.011	.010	. . .	.020	.053	. . .	.109	. . .
Rheumatism . . .	.378	.222	.454	.333	.215	.270	.405	.302	.436	.274	.302
Pyæmia	.175	.048	.155	.233	.154	.176	.114	.183	.138	.098	.078
Syphilis, congenital	.243	.128	.221	.133	.184	.280	.218	.215	.268	.254	.214
Syphilis, tertiary,	.094	.093	.088	.100	.133	.051	.503	.075	.079	.039	.097
Purpura	. . .	.058	.055	.011	.092	.011	.020	.075	.039	.089	.029
Alcoholism	.554	.644	.820	1.045	.687	.737	.571	.420	.585	.519	.604
Septicæmia	.175	.187	.122	.133	.277	.270	.322	.280	.228	.166	.175
Yellow fever . .	. . .	. . .	. . .	. . .	. . .	.010	.010	. . .	. . .	. . .	. . .
Tonsillitis	.040	. . .	. . .	.033	.102	. . .	.051	.043	.049	.068	.009

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Table VI.—Aggregate and Average Age and Parentage of Decedents.

1889.	American Parentage.			Foreign Parentage.			Mixed Parentage.			One Parent Known.			Unknown.			Total of all Parentages.		
	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.
January . . .	203	6,624	32.63	468	14,537	31.06	66	760	11.51	23	406	17.65	53	2,618	49.40	813	24,945	30.68
February . . .	180	6,256	34.75	426	14,121	33.14	75	848	11.30	25	504	20.16	44	1,976	44.90	750	23,705	31.60
March	217	6,970	32.12	491	15,613	31.79	82	716	8.73	26	646	24.84	58	2,516	43.38	874	26,461	30.27
April	244	8,274	33.91	556	17,141	30.82	84	1,036	12.33	18	502	27.88	47	2,082	44.30	949	29,035	30.59
May	213	7,786	36.55	460	14,874	32.33	79	814	10.30	25	436	17.44	61	2,143	35.13	838	26,053	31.08
June	200	6,159	30.79	437	12,872	29.45	67	657	9.80	18	206	11.44	34	1,221	35.91	756	21,115	27.93
July	268	6,186	23.08	568	14,443	25.42	121	979	8.09	35	296	8.45	52	2,357	45.19	1,044	24,261	23.23
August	213	5,799	27.22	578	16,668	28.83	96	689	7.17	37	459	12.40	49	2,490	50.81	973	26,105	26.83
September . .	169	4,848	28.68	520	15,560	29.92	83	549	6.61	25	213	8.52	40	1,656	41.40	837	22,826	27.27
October	201	6,497	32.32	462	15,221	32.94	66	432	6.54	28	371	13 25	47	2,476	52.68	804	24,997	31.09
November . .	159	5,334	33.54	402	13,356	33.02	57	499	8.75	25	582	23.28	59	2,294	38.88	702	22,065	31.43
December . .	234	8,200	35.04	535	18,696	34.94	72	853	11.84	20	498	24.90	58	2,626	45.27	919	30,873	33.59
Total	2,501	78,933	31.56	5,903	183,102	31.01	948	8,832	9.31	305	5,119	16.78	602	26,455	43.94	10,259	302,441	29.48

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Table VII. — Difference in Years between the Average Age of Decedents of Mixed, Foreign, and American Parentage.

MONTHS.	1889.					
	Average Age.			Average Age.		
	American.	Foreign.	Difference.	American.	Mixed.	Difference.
January	32.63	31.06	1.57	32.63	11.51	21.12
February	34.75	33.14	1.61	34.75	11.30	23.45
March	32.12	31.79	.33	32.12	8.73	23.39
April	33.91	30.82	3.09	33.91	12.33	21.58
May	36.55	32.33	4.22	36.55	10.30	26.25
June	30.79	29.45	1.34	30.79	9.80	20.99
July	23.08	25.42	2.34	23.08	8.09	14.99
August	27.22	28.83	1.61	27.22	7.17	20.05
September	28.68	29.92	1.24	28.68	6.61	22.07
October	32.32	32.94	.62	32.32	6.54	25.78
November	33.54	33.02	.52	33.54	8.75	24.79
December	35.04	34.94	.10	35.04	11.84	23.20
Total	31.56	31.01	.55	31.56	9.31	22.25

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Table VIII. — Aggregate of the Average Age of Decedents of American, Foreign, and Mixed Parentage for each Quarter of the Year 1889.

Parentage.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.
American	99.50	101.25	78.98	100.90
Foreign	95.99	92.60	84.17	100.90
Mixed	31.54	32.43	21.87	27.13

Table IX. — Average Age at Death with American and Foreign Parentage.

Years.	American Parentage. (Average Age.)	Foreign Parentage. (Average Age.)	Total Average. (All Parentages.)
1880	32.10	27.82	27.60
1881	30.96	27.82	27.29
1882	31.19	30.34	28.78
1883	30.73	29.22	27.79
1884	30.65	30.12	28.55
1885	32.54	30.79	29.49
1886	33.84	31.49	30.35
1887	31.84	30.63	29.26
1888	32.66	31.08	29.89
1889	31.56	31.01	29.48

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Table X. — Ten of the Principal Causes of Death, by Sex and Month, with Nativity of Parents.

	Jan.		Feb.		Mar.		Apr.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.									
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	United States.	Irish.	English.	Scotch.	Germany.	British Prov.	Other Countries.	Mixed.	Unknown.	Total.
Consumption	59	73	57	61	78	60	80	54	51	42	38	70	59	54	55	45	55	60	54	66	54	61	81	64	721	710	225	795	23	14	42	86	101	69	76	1,431
Pneumonia	53	42	89	39	55	71	57	65	56	45	22	20	20	16	23	11	20	13	34	21	33	31	83	65	495	439	238	377	20	14	19	48	69	84	65	934
Heart-disease	33	30	29	27	24	37	35	35	37	40	26	23	33	37	33	33	27	29	32	47	29	31	35	47	373	416	208	333	20	10	26	38	39	31	84	789
Diphtheria	27	32	18	24	22	18	27	27	22	28	34	23	15	17	19	17	22	22	21	28	19	23	33	26	279	285	141	139	8	3	25	50	73	108	17	564
Cholera-infantum	.	2	.	.	1	.	1	.	2	1	15	13	105	95	61	63	36	32	12	4	2	4	1	.	236	214	101	104	10	5	12	38	85	73	22	450
Bronchitis	15	17	19	19	19	37	34	27	22	18	12	8	11	13	11	14	19	13	21	20	14	22	27	16	224	224	102	176	8	3	10	21	64	47	17	448
Accidental and Violent	27	7	19	5	23	11	29	3	27	11	34	5	34	12	36	6	23	6	23	8	26	8	31	9	332	91	76	163	10	7	14	26	33	29	65	423
Marasmus, etc.	7	13	13	14	13	11	16	15	9	9	13	19	49	21	33	19	24	23	28	18	13	12	11	9	229	183	120	72	5	.	9	23	49	71	63	412
Cancer	11	22	4	16	11	19	10	20	10	17	2	17	4	15	11	21	5	12	3	17	11	19	8	21	90	216	106	120	12	9	12	4	18	5	20	306
Apoplexy	13	14	8	11	13	17	12	19	16	6	11	10	11	7	16	10	16	11	6	13	7	16	12	18	141	152	72	130	7	6	13	7	14	9	35	293

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Table XI. — Ten of the Principal Causes of Death, arranged by Age and Sex.

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs.		80 yrs. and under 90 yrs.		90 yrs. and under 100yrs.		Over 100 years.		Total of all ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Consumption	13	9	7	8	2	7	.	3	4	3	26	30	11	15	50	94	215	254	181	150	122	70	57	49	45	34	14	11	.	3	.	.	.	.	721	710
Pneumonia	72	68	43	45	20	23	9	9	10	9	154	154	14	16	15	8	45	24	70	38	58	48	53	44	49	58	25	31	12	13	.	5	.	.	495	439
Heart-disease	7	8	1	1	.	1	.	1	.	.	8	11	6	6	26	20	29	48	35	45	60	50	64	65	69	80	55	60	21	29	.	2	.	.	373	416
Diphtheria	14	11	34	40	45	46	50	45	33	27	176	169	77	90	16	16	6	5	1	4	3	1	.	.	.	.	.	.	.	.	.	.	.	.	279	285
Cholera-infantum	189	178	40	28	6	5	.	1	.	.	235	212	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	236	214
Bronchitis	95	71	32	32	16	9	5	6	1	3	149	121	5	2	.	3	3	7	6	4	11	8	14	23	15	21	12	21	9	14	.	.	.	.	224	224
Accidental and violent	13	9	2	1	5	2	6	3	3	.	29	15	13	3	25	5	71	18	59	13	59	10	51	12	14	7	9	4	2	4	.	.	.	.	332	91
Marasmus, etc.	193	144	13	11	4	1	2	1	2	.	214	157	3	1	3	1	2	2	1	1	2	2	.	6	2	6	1	2	1	5	.	.	.	.	229	183
Cancer	.	.	.	.	.	1	.	.	.	.	.	1	.	.	1	1	2	5	10	23	16	47	22	50	24	45	12	36	3	8	.	.	.	.	90	216
Apoplexy	2	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	2	5	8	8	21	16	15	24	38	36	41	37	14	23	.	2	.	1	141	152

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Table XII.—Deaths from Ten of the Principal Causes.

	Total Deaths from each Cause.	Percentage of each Cause to Total Mortality.	Deaths per 1,000 Inhabitants.	Total Deaths by Sex.		Total Deaths by Sex under Five Years.		Total Deaths under Five Years.	Percentage of each Cause under Five Years to Total Mortality.
				M.	F.	M.	F.		
Consumption	1,431	13.95	3.407	721	710	26	30	56	.545
Pneumonia	934	9.104	2.224	495	439	154	154	308	3.002
Heart-disease	789	7.690	1.879	373	416	8	11	19	.185
Diphtheria	564	5.498	1.342	279	285	176	169	345	3.363
Cholera-infantum	450	4.386	1.071	236	214	235	212	447	4.357
Bronchitis	448	4.367	1.067	224	224	149	121	260	2.534
Accidental and violent . .	423	4.123	1.007	321	102	39	26	65	.634
Marasmus, etc.	412	4.016	.980	229	183	214	157	371	3.616
Cancer	306	2.983	.729	90	216	. . .	1	.1	.009
Apoplexy	293	2.856	.698	141	152	2	. . .	.2	.019

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Table XIII.—Deaths from Principal Zymotic Diseases, by Sex and Month, with Nativity of Parents.

	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.										
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	U. S.	Irish.	English.	Scotch.	German.	British Prov.	Other Countries.	Mixed.	Unknown.	Total.
Small-pox	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	1	1	.	.	.	.	.	.	2	.	.	2
Measles	5	.	6	4	5	4	7	3	3	4	3	.	1	1	1	1	.	.	.	.	.	.	.	.	31	17	14	12	2	.	2	6	4	6	2	48
Scarlatina	.	.	2	.	2	5	1	1	1	3	.	.	.	1	.	1	.	.	1	1	.	.	4	.	11	12	7	4	1	.	.	2	3	5	1	23
Diphtheria	27	32	18	24	22	18	27	27	22	28	34	23	15	17	19	17	22	22	21	28	19	23	33	26	279	285	141	139	8	3	25	50	73	108	17	564
Croup	11	1	7	5	6	8	5	8	5	4	5	1	3	1	1	1	7	4	5	6	4	4	8	9	67	52	25	29	4	1	5	7	23	23	2	119
Whooping-cough	1	3	4	1	1	3	7	3	3	4	5	8	6	8	7	8	7	4	.	7	1	2	1	2	43	53	25	23	2	2	3	5	12	22	2	96
Typhoid fever	3	3	4	3	5	2	6	1	3	6	7	5	10	7	26	9	19	14	14	9	8	9	10	3	115	71	34	84	8	2	3	18	14	12	11	186
Erysipelas	5	1	1	.	2	1	3	5	2	1	.	.	1	.	.	.	.	.	.	.	.	1	1	15	9	9	6	1	.	.	2	3	3	.	24
Puerperal fever	.	2	.	2	.	2	.	2	.	1	.	.	.	1	.	1	.	.	.	.	.	.	.	1	.	12	.	5	1	.	1	4	. .	1	.	12
Carbuncle	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	.	.	.	.	1	1	.	1	1	.	.	. .	. .	.	.	2
Dysentery	.	2	1	1	1	1	.	2	1	3	1	2	1	10	13	12	4	11	.	7	1	1	1	.	24	52	16	36	2	2	2	2	4	1	11	76
Diarrhœa	5	3	2	3	5	2	2	5	4	6	8	6	21	20	13	16	6	12	4	2	3	6	5	4	78	85	25	33	.	.	4	14	18	16	53	163
Cholera-morbus	.	.	.	.	.	.	.	.	1	.	.	.	4	4	5	5	2	.	.	.	1	.	.	.	13	9	4	15	.	.	.	. .	1	.	2	22
Cholera-infantum	.	2	.	.	1	.	1	.	2	1	15	13	105	95	61	63	36	32	12	4	2	4	1	.	236	214	101	104	10	5	12	38	85	73	22	450
Cerebro-spinal fever	2	.	1	1	2	1	1	1	1	1	.	1	2	.	2	1	1	1	.	1	.	.	1	.	13	8	3	7	.	.	1	. .	3	6	1	21

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Table XIII. — Deaths from Principal Zymotic Diseases, by Sex and Month, with Nativity of Parents. — *Conc.*

	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.											
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	U. S.	Irish.	English.	Scotch.	German.	British Prov.	Other Countries.	Mixed.	Unknown.	Total.
Yellow fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rheumatism	1	2	2	2	1	2	3	4	.	1	4	3	1	.	.	1	1	.	.	1	.	1	1	.	14	17	8	14	.	.	.	1	6	1	1	31
Pyæmia	.	1	.	1	.	.	.	.	.	.	2	.	.	.	1	.	.	.	.	.	1	1	1	.	5	3	1	1	.	.	1	1	2	1	1	8
Syphilis, congenital	1	2	2	.	.	1	.	.	.	1	.	2	.	1	1	.	2	.	4	3	.	1	1	.	11	11	6	.	1	.	.	1	2	5	7	22
Syphilis, tertiary	.	1	1	.	1	.	1	.	.	1	.	.	.	1	.	.	.	.	1	1	.	1	1	.	5	5	1	6	.	.	1	.	.	1	.	1	10
Purpura	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.	.	3	1	2	.	.	.	.	.	.	.	.	3
Alcoholism	1	2	5	.	2	4	4	3	1	1	2	4	4	1	2	2	6	.	2	2	5	2	5	2	39	23	4	32	.	1	4	4	2	1	14	62
Septicæmia	.	1	.	3	.	1	1	3	.	4	.	1	.	.	.	1	.	.	.	2	.	1	.	.	1	17	6	4	.	.	1	.	.	3	2	2	18
Remittent fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Tonsillitis	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.	.	1
Typhus fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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Table XIV. – Deaths from Principal Zymotic Diseases, arranged by Age and Sex.

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs.		80 yrs. and under 90 yrs.		90 yrs. and under 100 yrs		Total of all ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Small-pox	.	1	.	.	.	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Measles	9	6	10	5	3	2	4	3	3	.	29	16	2	1	.	.	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	31	17
Scarlatina	1	1	1	.	4	1	.	1	1	1	7	4	2	6	.	1	.	.	2	.	.	1	.	.	.	.	.	.	.	.	.	.	11	12
Diphtheria	14	11	34	40	45	46	50	45	33	27	176	169	77	90	16	16	6	5	1	4	3	1	.	.	.	.	.	.	.	.	.	.	279	285
Croup	8	8	20	9	13	12	6	9	5	2	55	40	12	11	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	67	52
Whooping-cough	30	29	11	12	.	7	2	3	.	.	43	51	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	43	53
Typhoid fever	2	.	.	1	2	.	.	.	2	.	6	1	3	1	19	17	52	24	16	11	10	11	7	1	2	4	.	1	.	.	.	.	115	71
Erysipelas	6	6	.	.	.	.	.	.	.	.	6	6	.	.	.	.	2	.	1	.	2	.	2	1	2	1	.	.	.	1	.	.	15	9
Puerperal fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	.	4	.	2	.	.	.	.	.	.	.	.	.	.	.	12
Carbuncle	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	1	1
Dysentery	2	5	5	2	4	.	.	.	.	1	11	8	.	2	1	1	.	3	1	3	1	6	2	4	4	9	1	14	3	2	.	.	24	52
Diarrhœa	62	63	3	2	1	.	.	.	.	.	66	65	1	1	.	.	.	1	.	1	.	2	5	2	4	5	2	5	.	3	.	.	78	85
Cholera-morbus	1	.	.	.	.	.	.	.	.	.	1	.	2	.	1	.	1	.	1	.	1	4	4	1	2	3	.	1	.	.	.	.	13	9
Cholera-infantum	189	178	40	28	6	5	.	1	.	.	235	212	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	236	214
Cerebro-spinal fever	5	2	3	.	.	1	1	1	.	2	9	6	1	1	2	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13	8
Remittent fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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Table XIV.—Deaths from Principal Zymotic Diseases, arranged by Age and Sex. — *Concluded.*

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs		80 yrs. and under 90 yrs.		90 yrs. and under 100 yrs		Total of all ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F	M.	F.
Rheumatism	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	2	3	1	2	2	1	3	4	3	3	2	2	.	1	.	.	14	17
Pyæmia	1	.	.	.	.	.	.	.	1	.	2	.	.	.	1	.	1	1	.	1	1	1	.	.	.	.	.	.	.	.	.	.	5	3
Syphilis, congenital	9	7	2	2	.	1	.	.	.	.	11	10	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	11
Syphilis, tertiary	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	3	1	.	1	2	1	.	.	.	.	.	.	.	.	.	5	5
Purpura	.	2	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	3
Alcoholism	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	3	15	9	13	5	5	5	1	1	.	.	.	.	.	.	39	23
Septicæmia	.	.	.	.	.	.	.	1	.	.	.	1	.	1	.	1	.	8	.	5	.	.	.	1	.	.	1	.	.	.	.	.	1	17
Tonsillitis	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.
Typhus fever	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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Table XV. — The Number and Percentages of Deaths in each Quarter of each Year during a Period of Twenty-five Years, 1865-1889, inclusive.

Years.	First Quarter.		Second Quarter.		Third Quarter.		Fourth Quarter.		Rate per 1,000 Inhabitants.
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1865	1,115	24.55	1,068	23.52	1,353	29.80	1,005	22.13	23.6
1866	999	22.81	957	21.85	1,338	30.56	1,085	24.78	22.4
1867	1,071	24.22	950	21.49	1,191	26.94	1,209	27.35	22.3
1868	1,341	24.30	1,203	21.80	1,736	31.45	1,239	22.45	23.9
1869	1,374	24.88	1,297	23.48	1,562	28.28	1,290	23.36	23.4
1870	1,395	22.88	1,314	21.55	1,983	32.52	1,406	23.05	24.3
1871	1,411	23.97	1,299	22.06	1,842	31.28	1,336	22.69	23.
1872	1,697	20.97	1,777	21.97	2,511	31.04	2,105	26.02	31.80
1873	2,115	26.88	1,726	21.93	2,278	28.95	1,750	22.24	30.27
1874	1,805	23.11	1,818	23.27	2,278	29.16	1,911	24.46	24.9
1875	2,190	24.17	2,011	22.20	2,680	29.58	2,179	24.05	24.95
1876	2,246	27.21	1,809	21.92	2,375	28.78	1,823	22.09	23.39
1877	1,723	23.55	1,613	22.05	2,317	31.67	1,663	22.73	20.15
1878	1,743	22.82	1,744	22.84	2,174	28.47	1,975	25.87	21.03
1879	1,947	26.32	1,615	21.83	1,959	26.48	1,877	25.37	20.38

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Table XV. — The Number and Percentages of Deaths in each Quarter of each Year during a Period of Twenty-five Years, 1865-1889, inclusive. — *Concluded.*

YEARS.	FIRST QUARTER.		SECOND QUARTER.		THIRD QUARTER.		FOURTH QUARTER.		Rate per 1,000 Inhabitants.
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1880	2,015	23.62	1,829	21.45	2,500	29.30	2,187	25.63	23.53
1881	2,332	25.86	2,021	22.41	2,466	27.34	2,197	24.38	22.67
1882	2,104	23.39	2,212	24.59	2,489	27.67	2,190	24.35	21.91
1883	2,268	23.28	2,409	24.74	2,757	28.31	2,306	23.67	22.76
1884	2,284	23.73	2,103	21.85	2,725	28.33	2,510	26.09	22.48
1885	2,510	26.10	2,484	25.82	2,592	26.95	2,032	21.13	24.04
1886	2,214	23.89	2,113	22.79	2,580	27.84	2,361	25.48	23.17
1887	2,362	23.45	2,281	22.65	2,912	28.90	2,518	25.00	25.18
1888	2,790	27.36	2,420	23.73	2,649	25.98	2,338	22.93	24.57
1889	2,437	23.75	2,543	24.79	2,854	27.82	2,425	23.64	24.42

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Table XVI. – Total Deaths each Quarter of the last Five Years, with the Aggregate and Average Number from 1880 to 1884, inclusive.

	1885.	1886.	1887.	1888.	1889.	5 years, 1880-1884.	
						Aggregate.	Average.
First quarter	2,510	2,214	2,362	2,790	2,437	11,003	2,200
Second quarter . . .	2,484	2,113	2,281	2,420	2,543	10,574	2,114
Third quarter	2,592	2,580	2,912	2,649	2,854	12,937	2,587
Fourth quarter . . .	2,032	2,361	2,518	2,338	2,425	11,390	2,278
Total for each year,	9,618	9,268	10,073	10,197	10,259	45,904	9,180

Table XVII. — Total Deaths and Percentages each Quarter for the Year 1889, with Aggregates and Percentages for the Ten Years previous.

	1889.		1879-1888.	
	Deaths.	Per cent.	Deaths.	Per cent.
First quarter	2,437	23.75	22,826	24.67
Second quarter	2,543	24.79	21,487	23.23
Third quarter	2,854	27.82	25,629	27.70
Fourth quarter	2,425	23.64	22,576	24.40
Total	10,259	100.00	92,518	100.00

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Table XVIII.—Parentage of Children under One, Two, and Five Years for each Month during the Year 1889.

	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.
United States	54	7	14	39	9	10	44	17	16	46	18	19	29	18	15	43	11	15
Foreign	64	25	36	55	20	28	70	26	29	77	39	45	64	30	30	80	21	24
Mixed	28	4	10	31	7	9	46	10	7	38	8	12	27	11	16	22	9	6
One parent known	13	. . .	1	8	2	0	15	2	. . .	10	1	. . .	18	1	1	15	. . .	. . .
Unknown	4	. . .	1	14	. . .	1	5	. . .	. . .	6	1	. . .	15	. . .	. . .	3	. . .	1
Total	163	36	62	147	38	48	180	55	52	177	67	76	153	60	62	163	41	46

	JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.
United States	114	19	21	82	11	11	55	9	14	46	7	12	26	15	10	40	15	18
Foreign	178	31	37	139	29	30	121	32	28	68	32	24	51	16	22	54	17	31
Mixed	70	16	8	48	14	13	48	8	9	25	7	12	29	6	7	19	14	10
One parent known	31	. . .	. . .	29	1	. . .	17	2	. . .	20	2	1	17	1	. . .	13	. . .	. . .
Unknown	10	1	. . .	6	. . .	. . .	5	2	1	1	2	. . .	10	. . .	. . .	5	1	1
Total	403	67	66	304	55	54	246	53	52	160	50	49	133	38	39	131	47	60

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Table XIX. — Cases reported, and Deaths from Small-pox, Diphtheria, Scarlet Fever, and Typhoid Fever, with Percentages.

Date.	Small-pox.[1]		Percentages.	Diphtheria.		Percentages.	Scarlet Fever.		Percentages.	Typhoid Fever.		Percentages.
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.	
1872	2,592	738	28.4	.....	.....	.....	.....	.....	.....	.....	.....	.....
1873	1,103	302	27.3	.....	.....	.....	.....	.....	.....	.....	.....	.....
1874	7	2	28.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
1875	5	1	20.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
1876	6	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1877	17	4	23.5	.....	.....	.....	1,334	104	7.7	.....	.....	.....
1878	.....	.....	.....	1,370	448	32.7	848	68	8.0	.....	.....	.....
1879	.....	.....	.....	1,167	391	33.5	951	149	16.6	.....	.....	.....
1880	4	1	25.0	1,715	588	34.2	497	33	6.6	{ Oct. 1 to Dec. 31. }	{ Oct. 1 to Dec. 31. }	
1881	44	6	13.6	1,680	601	35.7	383	35	9.1	335	76	26.8
1882	24	8	33.3	1,386	458	33.04	689	75	10.8	808	212	26.2
1883	8	1	12.4	1,415	445	31.4	1,408	211	14.9	887	198	22.3
1884	1	1	100.0	1,212	345	28.46	2,526	209	8.2	948	216	22.6
1885	11	1	9.0	1,263	334	26.44	1,665	156	9.2	767	152	19.8
1886	1	.....	.....	1,188	329	27.69	1,149	81	7.0	814	135	16.5
1887	4	.....	.....	1,049	316	30.12	1,549	195	12.58	940	183	19.46
1888	8	1	12.4	1,411	470	33.30	707	65	9.19	924	170	18.39
1889	10	2	20.0	1,814[2]	564	31.09	464	23	4.96	1,071[3]	186	17.37

[1] Exclusive of quarantine. [2] Of these cases 20 were brought into the city. [3] Of these cases 48 were brought into the city.

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Table XX.—Result of Examination of Houses where Diphtheria[1] was reported to exist.

WARD.	Mistake in Report made by Physician.	Defective Sanitary Condition.	Premises in Good Sanitary Condition.	Other Cases.[2]	Total.	Fatal Cases.
I.	.....	34	17	3	54	12
II.	.....	16	10	3	29	5
III.	.....	18	6	4	28	6
IV.	.....	16	15	3	34	5
V.	.....	12	10	3	25	8
VI.	1	40	67	10	118	21
VII.	1	30	57	10	98	16
VIII.	.....	21	28	7	56	12
IX.	.....	21	11	1	33	3
X.	1	8	14	1	24	7
XI.	2	9	30	1	42	8
XII.	2	27	22	4	55	6
XIII.	1	71	56	18	146	29
XIV.	1	46	56	12	115	19
XV.	1	38	35	16	90	19
XVI.	2	24	24	6	56	7
XVII.	2	15	33	4	54	7
XVIII.	.....	14	22	15	51	246[3]
XIX.	.....	61	26	12	99	22
XX.	.....	43	30	8	81	18
XXI.	1	44	21	10	76	10
XXII.	2	46	28	6	82	29
XXIII.	.....	41	36	35	112	18
XXIV.	.....	30	36	7	73	7
XXV.	.....	57	80	26	163	24
Total	17	782	770	225	1,794	564[4]

[1] Number of cases reported, 1,814.

[2] The figures in this column show the number of places where premises were examined just prior to receipt of notice of diphtheria. About 75% of this number were found to be in bad sanitary condition.

[3] Of 246 deaths, 238 occurred at the Boston City Hospital.

[4] 20 cases reported from outside the city.

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Table XXI. — Showing the Yearly Mortality from Small-pox, Cholera, Typhus Fever, Typhoid Fever, and Yellow Fever for a Period of 33 to 50 years.

DATE.	Small-pox.	Cholera.	Typhus Fever.	Typhoid Fever.	Yellow Fever.
1840	115	. . .	. . .	. . .	. . .
1841	57	. . .	. . .	. . .	. . .
1842	42	. . .	. . .	. . .	. . .
1843	55	. . .	. . .	. . .	. . .
1844	. . .	. . .	. . .	. . .	. . .
1845	31	. . .	. . .	. . .	. . .
1846	92	. . .	. . .	. . .	. . .
1847	23	. . .	. . .	. . .	. . .
1848	21	. . .	. . .	. . .	. . .
1849	21	611	119	. . .	. . .
1850	192	1	61	43	. . .
1851	63	5	88	82	. . .
1852	12	. . .	46	66	. . .
1853	6	. . .	44	67	. . .
1854	118	218	38	62	. . .
1855	132	. . .	12	78	. . .
1856	78	. . .	6	70	. . .
1857	2	. . .	3	83	1
1858	3	1	2	73	5
1859	156	. . .	. . .	74	. . .
1860	162	. . .	. . .	. . .	. . .
1861	7	. . .	. . .	. . .	. . .
1862	13	2[1]	. . .	85	. . .
1863	11	2[1]	. . .	130	. . .
1864	113	. . .	10	107	. . .
1865	115	4[1]	12	125	. . .
1866	51	11	8	93	. . .
1867	144	1[1]	3	86	1
1868	8	2[1]	1	120	1
1869	6	. . .	. . .	148	. . .
1870	32	. . .	. . .	168	1
1871	28	4[1]	. . .	176	. . .
1872	738	. . .	. . .	229	. . .
1873	302	. . .	. . .	243	. . .

[1] Doubtful.

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Table XXI. — *Concluded.*

DATE.	Small-pox.	Cholera.	Typhus Fever.	Typhoid Fever.	Yellow Fever.
1874	2	...	...	202	...
1875	1	...	...	227	...
1876	2	...	...	145	...
1877	4	...	2	156	2
1878	...	...	...	120	...
1879	...	...	1	119	...
1880	1	...	...	154	...
1881	6	...	...	207	...
1882	8	...	...	212	...
1883	1	...	2	198	...
1884	1	...	1	216	1
1885	2	...	...	152	1
1886	...	...	...	135	...
1887	...	...	...	183	...
1888	2	...	1	170	...
1889	2	...	...	186	...

Table XXII.[1] — **Diseases arranged Alphabetically.**

Abortion	3
Abscess, unclassified	36
" of abdomen	3
" of liver	4
" of pelvis	3
" of thigh	2
Accidents, unclassified	76
" burns and scalds	38
" drowned	39
" fall	58
" fracture of leg	5
" fracture of neck	1
" " ribs	4
" " thigh	5
" " skull	31
" " spine	9

[1] This table does not include the total number of deaths.

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Accidents, poisoning	12
" railroad	67
" suffocation	15
" pistol-shot wound	1
Alcoholism	62
Anæmia	8
" pernicious	10
Aneurism, not located	4
" of aorta	6
Angina pectoris	12
Anus, imperforate	2
Apoplexy	293
Asthenia	6
Atelectasis pulmonum	23
Asphyxia of new born	8
Brain, disease of (unclassified)	36
" concussion of	2
" congestion of	25
" embolism	9
" inflammation of	19
" softening of	21
" tumor of	6
Bronchitis (unclassified)	275
" acute	44
" capillary	74
" chronic	55
Cancer (unclassified)	87
" of abdomen	7
" of bladder	5
" of bowels	8
" of breast	32
" of face	9
" of kidney	2
" of lungs	1
" of liver	26
" of neck	1
" of œsophagus	2
" of ovaries	6

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Cancer of pancreas	3
" of rectum	17
" of stomach	45
" of throat	1
" of tongue	2
" of uterus	51
" of vagina	1
Carbuncle	2
Cholera-infantum	450
" morbus	22
Cellulitis	10
Cirrhosis (unclassified)	7
Cirrhosis of liver	29
Convulsions	143
Croup	119
Cystitis	31
Cyanosis	23
Debility	52
Diabetes	20
" mellitus	7
Diarrhœa	163
Diphtheria	564
Dysentery	76
Embolism (unclassified)	4
" of brain	9
" of heart	2
" of lungs	1
Emphysema	5
Empyema	4
Enteritis	37
Entero-colitis	30
Epilepsy	13
Erysipelas	24
Fever, puerperal	12
" scarlet	23
" typhoid	186
Gangrene	17
Gastro-enteritis	34

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Goitre	1
Hæmatophilia	3
Heart disease (unclassified)	633
" dilatation	5
" embolism	2
" endocarditis	17
" fatty degeneration	16
" hypertrophy	3
" malformation	6
" pericarditis	10
" valvular	97
Hernia, strangulated	15
" congenital	2
" inguinal	2
Hydrocephalus and tubercular meningitis	181
Homicide	12
Inanition	108
Infanticide	2
Insanity	21
Jaundice	7
Kidney diseases (unclassified)	31
Kidney, Bright's disease of	155
" cancer of	2
Laryngitis	11
Leucocythæmia	2
Liver diseases (unclassified)	29
" abscess of	4
" cancer of	26
" cirrhosis of	29
" inflammation of	3
Locomotor ataxia	6
Lung diseases (unclassified)	4
" cancer of	1
" congestion	24
" œdema	9
" consumption	1,431
" embolism	1
" inflammation of	934

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Malformation of heart	6
Measles	48
Meningitis	231
" cerebro-spinal	21
Obstruction of bowels	28
Old age	282
Ovarian cancer	6
" tumor	11
Paralysis	105
Prostate gland (disease of)	3
Peritonitis	77
Pleurisy	10
Pneumonia	867
" broncho	59
" pleuro	8
Poisoning (accidental)	12
Premature birth	173
Puerperal diseases, not including puerperal fever	34
Pyæmia	8
Rheumatism	31
Scrofula	9
Septicæmia	18
Small-pox	2
Softening of brain	21
Sarcoma	10
Spinal disease (unclassified)	15
" disease, Pott's	1
" inflammation	5
Spina bifida	6
Stomach, inflammation of	40
Stomach, ulceration of	8
Suffocation	15
Suicide	42
Sunstroke	3
Surgical operation (death following)	12
Syphilis	10
" congenital	22
Tabes-mesenterica, and marasmus	403

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Teething	9
Tetanus	5
Tonsillitis	1
Tuberculosis	100
Tumor (unclassified)	5
" of abdomen	8
" " brain	6
" " ovary	11
" " uterus	3
Uterine disease, cancer	51
" tumor	3
Umbilical hæmorrhage	3
Whooping-cough	96

CHOLERA-INFANTUM.

With the general improvement of the health of children, and the decrease of infant mortality during the past decade, the deaths from cholera-infantum bear also a proportionate decrease. During the five years ending 1884, the percentage of total deaths from this disease to the total mortality was 5.51; whereas, during the same period ending 1889, the percentage of deaths was only 4.63.

The following table, for a period of nineteen years, shows, for three months each year, the effects of temperature and humidity on the disease: —

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Comparison of Deaths from Cholera-Infantum for Three Months of each Year during a Period of Nineteen Years, with Temperature and Humidity, also Percentages to the Total Mortality.

DATE.	CHOLERA-INFANTUM.					TEMPERATURE.											
						June.				July.				August.			
	June.	July.	August.	Total Deaths.	Percentage to Total Mortality.	Highest Temp.	Lowest Temp.	Mean Temp.	Humidity.	Highest Temp.	Lowest Temp.	Mean Temp.	Humidity.	Highest Temp.	Lowest Temp.	Mean Temp.	Humidity.
1871	20	245	160	425	7.21	91.	50.	55.9	57.2	92.	57.	70.8	59.2	89.	55.	71.2	71.2
1872	26	327	231	584	7.21	93.5	47.	58.2	71.3	98.5	55.	74.7	67.6	95.	50.	72.4	75.5
1873	19	168	263	450	5.71	93.0	47.	67.8	59.2	96.	55.	73.0	69.4	96.	50.	68.9	69.4
1874	12	152	276	440	5.63	98.	49.	66.1	69.1	94.	46.	72.8	69.9	91.	51.	58.1	70.0
1875	13	215	268	496	5.47	94.	46.	66.7	64.0	93.	54.	71.4	68.1	87.	54.	70.2	75.7
1876	18	220	198	436	5.28	90.	44.	58.1	74.5	96.	52.	73.8	69.4	96.	50.	59.9	68.2
1877	14	206	180	400	5.46	92.	47.	66.9	56.8	91.	57.	70.1	75.9	92.	58.	71.0	78.5
1878	6	135	154	295	3.73	92.	45.	64.1	57.0	98.	54.	72.9	67.1	87.	53.	67.8	68.3
1879	3	102	175	280	3.78	96.	45.	64.1	70.4	94.	50.	70.0	68.8	95.	52.	68.1	72.7
1880	24	179	182	385	4.51	93.	48.	67.3	67.4	101.	52.	70.1	73.2	96.	47.	68.9	72.6
1881	. .	104	196	300	3.32	86.	44.	60.6	70.0	89.	54.	68.5	73.1	97.	53.	69.5	74.0
1882	11	187	197	395	4.39	94.	48.	65.9	63.8	98.	52.	71.7	65.1	92.	51.	70.0	66.0
1883	23	228	199	450	4.62	90.5	51.0	69.0	72.9	96.0	51.4	71.1	71.7	91.8	48.0	67.6	66.8
1884	11	158	179	348	3.61	92.6	42.0	66.0	74.5	90.3	53.6	68.0	75.5	94.3	51.0	68.2	84.5
1885	16	226	135	377	3.91	91.9	45.3	66.4	62.0	92.8	51.4	71.3	69.8	88.8	47.2	67.4	76.0
1886	5	170	151	326	3.51	81.7	50.3	63.1	70.6	95.4	54.5	70.8	69.8	90.4	49.3	67.7	71.7
1887	6	223	175	414	4.10	89.0	47.5	64.5	71.7	95.0	61.0	73.0	77.0	86.3	52.2	67.1	74.2
1888	6	130	192	328	3.21	96.0	49.0	68.4	68.0	88.0	51.0	68.3	68.06	88.2	52.0	69.0	70.7
1889	28	200	124	352	3.43	87.0	50.0	67.7	79.3	86.0	55.0	69.0	82.2	84.0	52.0	67.4	78.6

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CONTAGIOUS DISEASES.

The number of cases of contagious diseases reported to the board of health for the year 1889 was 5,758, against 4,500 in 1888. The total number of deaths from the same diseases in 1889 was 823, against 734 in 1888. Small-pox has been discovered in 10 cases, and there have been 2 deaths, against 8 cases and no deaths in 1888. Scarlet fever was less prevalent. There were 464 cases reported and 23 deaths, against 707 cases and 65 deaths in 1888. Measles was more prevalent. There were 2,399 cases reported and 48 deaths, against 1,517 cases and 27 deaths the year before. Typhoid fever was reported in 1,071 cases, and there were 186 deaths, against 924 cases and 170 deaths in 1888.

Diphtheria has been present in Boston for thirty years, and during the past year there have been 1,814 cases reported and 564 deaths. In 1888 there were 1,411 cases reported and 470 deaths. The first death was reported in 1859, and the deaths reported thereafter are given in the following table: —

1859	19		1870	51		1881	601	
1860	1		1871	39		1882	458	
1861	17		1872	28		1883	445	
1862	46		1873	59		1884	345	
1863	108		1874	72		1885	334	
1864	118		1875	420		1886	329	
1865	51		1876	577		1887	316	
1866	52		1877	364		1888	470	
1867	47		1878	448		1889	564	
1868	67		1879	391				
1869	61		1880	588				

The disease has not been confined to any particular locality, but has been very generally disseminated throughout the city. It is an interesting fact that the disease has not been particularly prevalent in the crowded and imperfectly drained portions of the city, but has been fully as prevalent where the sanitary conditions are comparatively good. This would seem to prove that crowded tenements,

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imperfect drainage, and poor hygienic surroundings, although important factors in causing the prevalence of the disease, are not the whole cause, but that contagion, not only from the severe cases, but from mild and unrecognized forms, is the most important factor. The history of various epidemics in different cities bears out this statement. It is interesting to note that the average age of the patients has been six years, which fact has an important bearing upon the isolation or removal to hospitals. It very frequently happens that a child a year old will be ill with the disease and the mother is willing to go with it to the hospital, if suitable provision could be made for the other children. Unfavorable comment has frequently been made that the board of health has not so effectually dealt with diphtheria as it has with small-pox. It must be borne in mind, however, that in the case of small-pox we have the protective power of vaccination. In spite of the endeavors of the board of health to have cases of diphtheria removed to the City Hospital, only 347 out of the 1,814, or about 1 in 5 of the reported cases, have been induced to go.

Large and commodious wards, supplied with every facility for treating the disease, are open and ready to receive patients; still it has been the experience of the medical officers of the board of health that no amount of urging, in many instances, will induce mothers to send their children to the hospital. Diphtheria for the past four years has been apparently increasing in Boston, but it must be borne in mind that the population is also increasing. The disease is also more readily recognized to-day than it was five years ago, and the cases of diphtheria are more generally reported. The results obtained in Glasgow for the suppression of this disease have certainly been remarkable. The power, however, of the health officers in Glasgow is immeasurably greater than the power of the board of health in Boston, and for that very reason much more can be accomplished in Glasgow. In order to effectually deal with an epidemic of diphtheria, the following things are absolutely necessary: First, a good hospital, this the city has; second, what might be termed a

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house of refuge, where all who had been exposed to the disease might be placed for a reasonable time; third, a building in which convalescents could be placed during the process of disinfection of their houses; fourth, a careful medical supervision of the schools, for it is an undisputed fact that many children attend school while they are suffering from the disease in a mild form, and communicate diphtheria to other children; fifth, power to remove these cases in tenement houses, not only the legal power, but also that which is of fully as great importance, the moral support of the community; sixth, the prompt report of cases, not only of diphtheria, but also of membranous croup, which is conceded by the best medical authorities of the present day to be the same as diphtheria; seventh, the prohibition of public funerals in cases of diphtheria. The report of cases is evaded in many ways, by using the term "laryngitis," and various other terms, which, if not absolutely incorrect, serve to mislead, not only the friends of the patient, but also the general public. It is useless for any health authority to try to accomplish anything in the suppression of a disease without plenty of money, freedom from the annoyance of legal complication, and the full, free, and hearty coöperation of the community. The history of the great epidemic of small-pox in 1871 and 1872, and the comparative freedom of the city from this disease since that time, proves this conclusively. In regard to the removal of patients, it is neither desirable nor important to send all indiscriminately to a hospital, for in many instances the patients can be isolated at home, or the other members of the family can be sent to some institution under the control of the board of health. A patient can be perfectly isolated in a house occupied by only one family. Isolation is also comparatively easy in one of the modern apartment houses, but in the ordinary dwelling-house, occupied by two or more families, isolation is practically impossible. The history of the course of diphtheria the past two years demonstrates this.

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DISINFECTION.

The table below shows the number and character of the places that have been treated with disinfectants during the year: —

DISINFECTION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Streets	1	1	2	2	13	31	35	43	49	38	35	9	259
Places	2	1	6	4	45	54	101	75	94	131	61	17	591
Courts	1	1	2	8	30	33	97	45	71	73	53	10	424
Alleys	20	31	49	62	218	198	396	383	285	301	236	66	2,245
Yards	347	202	469	544	833	1,282	2,014	2,015	1,825	1,761	1,283	338	12,913
Vaults	513	372	505	541	1,016	1,538	2,167	2,092	1,944	1,577	1,169	470	13,904
Cellars	393	420	403	470	598	957	1,247	1,063	1,068	1,268	893	272	9,052
Cesspools . . .	107	23	89	349	536	952	1,334	1,564	1,520	899	834	187	8,394
Gutters	16	2	13	66	123	359	928	1,125	1,114	500	395	96	4,737
Water-closets .	302	265	334	363	490	807	750	789	1,024	1,144	783	313	7,364
Passageways . .	12	31	37	107	189	539	620	726	699	786	642	157	4,545
Urinals	8	3	9	5	16	22	107	136	35	43	36	11	431
Vacant lots . .	3	4	30	41	42	138	135	175	116	263	133	39	1,119
Filthy sheds . .	153	218	239	280	452	588	813	1,231	1,029	1,024	870	255	7,152
Filthy and infected rooms .	3	190	398	246	352	264	211	128	256	261	223	136	2,668
Sinks	539	626	694	664	873	1,048	1,204	1,231	1,074	1,373	1,114	595	11,035
Total	2,420	2,390	3,279	3,752	5,826	8,810	12,159	12,821	12,203	11,442	8,760	2,971	86,833

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The following table shows the number of rooms disinfected, in which contagious diseases have occurred:—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Diphtheria	125	108	128	144	143	123	81	66	76	108	96	117	1,315
Scarlet fever	35	18	36	34	44	23	14	11	16	16	19	23	289
Typhoid fever	..	..	..	..	1	..	..	1	1	2	2	..	7
Measles	..	1	1	..	1	1	..	..	..	..	..	..	4
Small-pox	..	..	..	..	..	..	..	..	..	2	3	..	5
Schools	..	..	1	1	..	1	..	..	..	..	1	..	4
Vacant houses	..	..	..	..	..	..	..	2	..	..	..	..	2
Day nursery	..	..	..	..	..	..	..	1	..	..	..	..	1
Infected bedding and clothing	..	2	2	2	..	..	..	1	..	2	4	..	13
Infected carriage	..	..	..	..	..	..	..	..	..	..	1	..	1
Total	160	129	168	181	189	148	95	82	93	130	126	140	1,641
No. of rooms	415	296	443	390	438	359	215	270	241	354	266	326	4,013
Pounds of sulphur used	2351	1478	3563	1806¼	1926¼	1937½	910¼	1172	1108	1730	1593¾	1583¼	21,160

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The following materials have been used: Bichloride of mercury, 2,100 pounds; chloride of lime, 100,800 pounds; copperas, 4,200 pounds; sulphur, 21,600 pounds, and about 4,800 pounds of other disinfecting powder.

These substances are used with a view of arresting and preventing decomposition and of destroying disease germs. The bichloride of mercury is used in solution, — 1 part in 500 of water for vaults, cesspools, alleyways, and other foul places, and 1 part in 4,000 in the streets. The copperas is used in connection with the mercury, in a small percentage, to aid as a deodorant. The lime is used both dry and in solution — one-half pound to the gallon — in vaults, yards, cellars, street gutters, water-closets, and wherever plumbing work or metallic surfaces might be affected by mercury. The sulphur is burned to produce sulphur dioxide gas as a disinfectant. By far the most important part of this work is in the effort to destroy the germs of contagious diseases. Where such a disease has existed, the householder is required by statute law to immediately disinfect, to the approval of the board of health; but this is found to be wholly impracticable, and such work, therefore, if done at all, must be done by the city. Our process in such cases, although not always insisted upon, is to close up the apartments to be disinfected, tightly, and to burn four pounds of sulphur to each 1,000 cubic feet of space, evaporating water with the heat of the burning sulphur, and keeping the room closed for ten hours. In cases of small-pox this is all we ordinarily do; but in cases of diphtheria, scarlet fever, and typhoid fever, where the sputa or some other of the secretions may have become fixed and dried upon articles or surfaces in the room, and, moreover, where a stronger germicide is required for the spore-bearing germ which is likely to become so fixed, we rub the walls, floors, and other hard surfaces with a solution of bichloride of mercury, — 1 to 500, — and boil for one hour articles of clothing and bedding.

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WELL-WATERS.

The following analyses have been made of water taken from wells suspected of being contaminated: —

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Analyses of well-waters. **Figures express parts**

LOCATION.	Date of Analysis.	Whence taken.	AMMONIA.		Chlorine.	RESIDUE.		
			Free.	Albuminoid.		Fixed.	Volatile.	Total.
1 Church street, W.R. . . .	Jan. 26	Well.	0.0036	0.0040	4.70	14.80	8.00	22.80
2 " " " . . .	"	"	0.0044	0.0052	5.25	12.20	3.20	15.40
Faneuil street, Bri., G. H. Brooks	Feb. 20	"	0.0008	0.0044	1.75	2.10	6.50	8.60
Highland ave., Dor., Mrs. Lewis	" 27	"	0.0006	0.0376	5.90	32.10	21.50	53.60
Arlington pl., Bri., A. Timmins	Apr. 8	"	0.0420	0.0128	3.85	18.40	12.00	30.40
36 Dunlow street, Ward 19, No. 1	Sept. 7	"	0.3072	0.0118	9.70	53.40	15.30	68.70
Rear 36 Dunlow st., Ward 19, No. 2	"	"	0.2496	0.0440	3.75	21.90	4.20	26.10
Rear 36 Dunlow st., Ward 19, No. 3	"	"	0.2632	0.0180	5.45	31.70	15.90	47.60
544 Bennington st., E.B. .	Oct. 21	"	0.0168	0.0052	8.75	31.30	22.00	53.30
Linnett st., W.R., No. 1 . .	Dec. 7	"	0.0080	0.0058	0.85	7.20	4.60	11.80
" " " No. 2 . .	"	"	0.0004	0.0040	0.52	2.70	3.30	6.00

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per 100,000 of water. **Analyses of well-waters.**

Hardness.	Transparency.	Color.	Odor.	Characteristics on Ignition.	Nitrates.	REMARKS.
12°	Clear.	None.	Stale.	Slight blackening.	None.	Cannot be highly recommended for household use.
5°	"	"	"	" "	"	Cannot be highly recommended for household use.
5½°	"	"	None.	No blackening.	"	No evidence of injurious contamination.
Excessive.	"	Very slight.	"	Slight blackening.	Trace.	Unfit for drinking or cooking purposes.
8°	Fairly clear.	Very slight.	"	" "	"	Contaminated with sewage.
Excessive.	Clear.	None.	Stale.	Considerable blackening.	Present	Highly contaminated with sewage.
Excessive.	"	Brown.	"	Considerable blackening.	"	Highly contaminated with sewage.
Excessive.	Turbid.	"	"	Considerable blackening.	"	Highly contaminated with sewage.
Excessive.	Clear.	None.	Earthy.	Slight blackening.	Large trace.	Contaminated with sewage.
4°	"	Very slight.	Very slight.	" "	None.	This water classed as suspicious.
2°	"	None.	None.	" "	"	Excellent water.

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SCHOOL-HOUSES.

All of the public school-houses have been examined and re-examined, and their sanitary defects reported to the superintendent of public buildings, and in many instances the drainage and ventilation have been improved.

Owing to the occurrence of several cases of diphtheria among the pupils of a school located in the best section of the city, and the fact that the parents of the school children in this section felt apprehensive that the cause of the disease would be found in a defective condition of the drains and other sanitary appliances of this school-house, directions were given to close the school and tear up the drains, and an order was introduced in the Board of Aldermen requesting the board of health to examine into the sanitary condition of all of the school-houses and report through the press. The drains of this building, when exposed, were found to be as tight and sound as when laid fourteen years ago. It should be said in this connection that the bad sanitary condition of the school-house may bear no relation to the number of cases of diphtheria among the school children of the district, and that a mild unrecognized case among the pupils, with the close contact which takes place with such children, is a very frequent cause of the spread of the disease. The removal of the old and substitution of a new drain in this case, however, served a good purpose in removing a doubt as to the condition of the drainage of this building, and in restoring to the school many children who had been withdrawn. Under the order of the City Council, the board of health felt warranted in considering not only the condition of the drainage, but the questions of ventilation, overcrowding, and the surrounding area for light and air.

The following are copies of the order of the City Council and the report of the board of health: —

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CITY OF BOSTON.

IN BOARD OF ALDERMEN,
May 27, 1889.

Ordered, That the Board of Health be requested to make a special examination of the sanitary condition of the public school-houses, and report the same through the public press.

Approved by the Mayor, June 8, 1889.

To the Honorable City Council: —

GENTLEMEN, — In response to an order of the City Council, received June 10, requesting the board of health to examine the school-houses of the city, and report their sanitary condition to the press, we beg to present the following statement and recommendations, a copy of which has been sent to the press: —

The principal part of the work was done during the last few days before the closing of the schools in June, but the number of pupils in each building was not obtained before the teachers had left the city for their vacations. This information was received only since the return of the teachers in September, otherwise this report would have been made in June.

We have examined 163 school-houses, with the following results: Defective drainage was found in 35, want of traps in 7, offensive privy-vaults in 51, offensive urinals in 49, offensive and defective cesspools in 15, offensive water-closets in 6, defective rain-conductors in 4. The number of defective and offensive drains, vaults, cesspools, and water-closets being so much larger than is usually found in our yearly inspection of school-houses is explained by the fact that this examination was made just before the annual repairs were begun by the superintendent of public buildings, instead of covering the whole year, as has been the case heretofore. In all cases where defects were found, the superintendent of public buildings was notified, as usual, and on reëxamination the repairs were found to have been made in most instances. The ventilation of the buildings, the condition of the cellars and the surrounding air spaces, were especially examined and call for special remark. Fifty-seven of the cellars were dark, musty, or damp. Forty-six of the houses could properly be criticised as having too little yard room or air space surrounding them, while some are closely hemmed in by high buildings, or by objectionable trades.

Of the 163 houses, 146 are without any modern or efficient means of ventilation, being dependent upon the old-fashioned shafts in the wall, aided here and there by small apertures through the external walls; all of which is too feeble to be called ventilation. In eleven of the school-houses the extraction of foul air has been more or less promoted by the aid of heat applied to the outlet shafts to increase the current of air, and in six others the same object has been sought and more or less effected by the use of exhaust fans in the tops of the buildings.

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It would be much better if all privy accommodations were removed from the cellars to an adjoining apartment, where ventilation and such use of water or heat for the disposal of excreta could be used, as may be found most healthful and economical by expert calculation. A dry and light cellar would be largely promoted by this step, and what is now a possible danger would be altogether avoided. The question of yard room and the surroundings of the school-houses is an important one, and should be carefully considered in giving the necessary sunlight and fresh-air currents about the buildings.

The large number of pupils in each building and the lack of means for extracting the foul air have claimed the most attention and constitute the greatest sanitary evil connected with our schools.

In our recent examinations we find, by measurement, that the average number of cubic feet of space given to each pupil, in 163 houses examined, is as follows: —

	Cubic feet.
Reckoned by the number of seats	202
Reckoned by the registered pupils	235
Reckoned by the average attendance	267
Ten of the best gave an average as follows: —	
Reckoned by the number of seats	407
Reckoned by the number of registered pupils	504
Reckoned by the average attendance	559
Ten of the poorest gave an average as follows: —	
Reckoned by the number of seats	90
Reckoned by the number of registered pupils	99
Reckoned by the average attendance	112

These measurements were made by twelve inspectors, and, while there may be slight errors in individual cases, they may be regarded as too small materially to affect the averages given.

In 1874 we caused to be made a chemical analysis of the atmosphere of every room in ten school-houses. The selection of the houses, and the methods pursued, were such as to give a fair average of the condition of the air in all of the school-houses of the city, without needlessly extending the expense. The result of this examination showed that in only one room of the 111 rooms examined was the impurity as low as 5.7 volumes of carbonic-acid gas to 10,000 volumes of air, and from this it ranged as high as 30 volumes to the 10,000. The rooms of the best house averaged 8.3 volumes to 10,000, and those of the poorest one 18.1 volumes to 10,000. The majority of the school-houses remain unaltered. Having ascertained the actual condition of the air in the average school-room, are we justified in saying that such an atmosphere is unwholesome and produces mental and physical lassitude in the children?

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According to the best information that we have on this subject, a person requires about 3,000 cubic feet of fresh air each hour, in order to keep himself in a healthful condition, and preserve the purity of the air. In other words, a person uses about 3,000 cubic feet of air each hour, and when it is once so used it is not fit to breathe again until it has been renewed An excess of carbonic-acid gas in the air is regarded by authorities as indicating an excess of other impurities, and has been adopted as a standard measure in testing the purity of the air. The normal atmosphere contains about 4 volumes of carbonic-acid gas in each 10,000 volumes of air, and when the amount of carbonic-acid gas exceeds 7 volumes in 10,000, the air becomes perceptibly vitiated, and cannot be regarded as suitable for respiration. We have found, by measurement, that the average air space allotted to each pupil in the average school-room, with an average attendance, is 267 cubic feet, and when the seats are filled, 202 cubic feet. Now, if 3,000 cubic feet are needed for each pupil per hour, the amount given to start with will last from four to five minutes, and to be kept fresh must be changed from twelve to fifteen times each hour, which is impracticable. In the poorer houses, or those in which the smaller spaces are given, the change of air, by the same rule, would need to be made about thirty times per hour. We have stated the amount of air-supply found to be necessary for the best results. Two thousand cubic feet per hour would be a compromise, and not an unreasonable amount to ask for. Can this be done, and how?

The practicability of ventilating school-houses admits of no doubt. It is as much a matter of exact knowledge as any other question in mathematics or engineering. The air should be introduced into the room at a proper temperature, well distributed to the children, and removed sufficiently often to prevent foulness and without producing uncomfortable draughts. This can be done only with the aid of power, and may be accomplished by heated shafts or fans. The air may be propelled into the room and escape by properly arranged outlets, or the foul air may be extracted from the room, having properly arranged inlets for the fresh air. All dependence upon natural ventilation should be abandoned as delusive and untrustworthy, and the simple question of expense for the use of the necessary power to move the air be recognized and met without further delay.

The board of health would respectfully recommend that His Honor the Mayor be authorized to appoint a board of three sanitary experts, who shall consider and report to your honorable body within six months from their appointment the best method and specifications for ventilating our school-houses and of disposing of the excreta therefrom; and that for such services the experts be paid a liberal compensation.

For the Board of Health,

S. H. DURGIN,
Chairman.

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It may be added that the recommendation for expert advice in ventilation sprang from a belief that a greater economy in the expenditure of money, as well as the best results in ventilation, would thus be secured.

The board, therefore, earnestly renews its recommendation that the advice of three engineers skilled in the science and practical treatment of school-house ventilation be obtained in the manner expressed in the report to the City Council.

In view of the fact that many of the school-houses have been located upon unhealthful sites, and are without adequate areas for light and air, we would respectfully recommend that no site for a school-house be hereafter accepted by the city until approved by the board of health.

TENEMENT HOUSES.

By an amendment to the act in relation to tenement houses in the city of Boston, passed by the last Legislature, a tenement house was defined as a building which, or any portion of which, is occupied, or is to be occupied, as the residence of more than two families living independently of one another, and doing their cooking on the premises. The former act provided that a tenement house should be taken to mean a building which was occupied by more than three families, living independently of one another, etc. The effect of this amendment has been greatly to increase the number of houses which must be classed as tenement houses, and the work of inspecting them has increased in a corresponding ratio. Taking the old definition, it was estimated that there were about 3,500 tenement houses in the city. Under this amended definition, however, there are about 8,500, or more than double the old number of houses which must be inspected twice a year, at least, under the direction of this board, in order to comply with the provisions of the law. With a force of but fifteen inspectors, it is practically impossible to do this, and at the same time attend to the complaints against public and private dwellings, which are constantly being lodged at this office, and which by them-

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selves require a large part of the inspectors' time. Nevertheless, the inspection of all tenement houses has been energetically pushed during the year, and information as to their state of cleanliness, repair, drainage, ventilation, privy accommodations, and as to the number of people occupying the rooms has been obtained, and is on file at this office. Where overcrowding or defective sanitary conditions have been found, the owners of the property have been notified and the faults complained of have been attended to. The provisions of the tenement-house law relating to the whitewashing of the interior walls have been rigidly enforced, and it may safely be said that the tenement houses of the city are in a better condition to-day than they have ever been before. This is not saying that they are all that they should be, however, or that there is not room for material improvement in this class of dwellings. That desirable condition of things can be achieved only when the whole tenement-house system, as it now exists in Boston, has undergone radical changes.

SEWERAGE.

The plan for sewering the remaining portion of the metropolitan district, which embraces Cambridge, Somerville, Charlestown, Chelsea, East Boston, and other cities and towns on the Charles and Mystic rivers, was submitted to the Legislature last winter, was approved, and the Governor has appointed the several commissioners for building the sewer and apportioning the expenses of the same upon the cities and towns through which it passes. Preparations are being made, and work will be begun early in the spring. When this work has been done and the sewage of these cities and towns diverted from the flats and docks on the borders of the Charles and Mystic rivers, the citizens of Boston will be relieved from a nuisance of great magnitude.

The necessity of extending the public sewers in the outlying sections of the city, and the reconstruction of many of the old ones in the thickly populated districts, is a subject which deserves the prompt attention of the City Government as a measure for the protection of the public health.

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One of the provisions of an act to amend the acts relating to the preservation of health in buildings in the city of Boston, passed by the last Legislature, provides that if there is no sewer in a street, court, or passageway, where, in the opinion of this board, the public health requires one, said board shall so certify to the Board of Aldermen of said city, and said last-named board shall forthwith lay and make a common sewer in such street, court, or passageway; provided, however, that said Board of Aldermen shall not be required in any one year to make sewers in accordance with this act to cost, in the aggregate, more than ten thousand dollars.

Under the provisions of this act the board of health exercised the authority therein conferred to the extent of certifying to the necessity of a sewer to drain the houses situated on Freeman street, and on Charles street between Freeman and Ditson streets, Ward 24, and transmitted this certificate to the City Council; but the sewer called for has not been provided, although the terms of the act are mandatory, and require that the work be done forthwith. It is sufficient to say that the necessity for a sewer in the locality above named is such as to demand an early compliance with the board's request.

DISPOSAL OF WASTES.

There are now about three hundred and fifty thousand loads of garbage, ashes, street-sweepings, and other miscellaneous *débris* gathered up by the city teams annually and carted away to different places and for different uses.

The annual cost to the city in handling this large amount of material is about five hundred thousand dollars, about one hundred thousand of which is spent in collecting garbage. With the growth of the city and the gradually increased distance to which such matter must be carried for disposal, comes a corresponding increase in the expense.

The question occurs to us, cannot this growing expense be lessened, and much of the offence now attending the necessary storing of garbage in the houses and yards, and the

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handling and carting of it in the streets, be avoided? It is found that with trifling cost in arranging the kitchen stove, each family can easily burn all its refuse as it is made, and before it becomes offensive, and thus save all subsequent expense and nuisance incident to its being kept on the premises for several days and then carried through the streets by the city teams.

In the city of Minneapolis, the process of immediate burning is successfully carried out by a large majority of the families, leaving but a small percentage of the material to be removed, and this is done at the expense of the parties for whom the removal is made.

We respectfully recommend that this question be considered by the City Council.

THE ABATTOIR.

For twelve years the inspection of live animals and dressed meat at the abattoir has been done by officers of this department, who were somewhat familiar with the diseases among animals; and, although not scientifically trained for the work, they have succeeded in detecting and condemning much unwholesome meat which, through the innocence of its owners or otherwise, would have forced its way upon the market. Believing, however, that this work should keep pace with the advanced knowledge of the diseases among domestic animals whose flesh is used for human food, and in the danger of communicating such diseases to man through animal food, the board instituted a new order of inspection on the 1st of October. Dr. Alexander Burr, a recent graduate from the Harvard Veterinary School, was appointed as inspector. His report for the three months, ending on the 31st of December, will be found in the Appendix, also that of Prof. Wm. F. Whitney, of the Harvard Medical School, through whose kindness the work of Dr. Burr has been largely promoted.

GLANDERS.

There have been eight cases of glanders reported during the year, all of which were reported to the cattle commis-

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sioners. The board of health secured the immediate killing of four of the cases, and the others were subsequently disposed of under the direction of the cattle commissioners.

STREETS AND ALLEYWAYS.

The poor sanitary condition of our streets and alleyways has been the subject of much unfavorable criticism from the citizens and the board of health for many years; and were it not for the fact that the streets and alleyways cover nearly one-quarter of the area of our city, the board of health might not feel that the uncleanly condition of the streets and alleyways exerted any considerable influence upon the health of the city, and would refrain from its annual and semi-annual allusions to them. There are several causes which have contributed to this condition of these places. First, in putting down a coarse, open-jointed pavement. Second, in the repeated tearing up of the streets. Third, in the impracticability of sweeping or making any street clean which is full of open seams and depressions. Fourth, the macadamized street presents a sour, semi-liquid paste, or a cloud of dust the greater part of the time. This condition of street surface is not only distasteful to the sense of sight and smell, but unhealthful, and the cause of an infinite amount of labor and annoyance to the private citizen in his house. We believe that both public health and convenience would be materially improved by smooth and durable streets, upon which filth and puddles of water would not find easy lodgement.

The alleyways are in bad condition and without any trustworthy care in most parts of the city. It is not practicable to secure their proper care under the present laws and ordinances, and the board would respectfully recommend that the city secure the right of control and sanitary care of all the passageways of the city.

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NUISANCES ABATED.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
House-drains repaired	214	172	233	190	324	209	200	196	197	210	226	256	2,627
Vaults cleaned and repaired	67	43	117	125	192	170	206	91	115	63	56	60	1,305
Traps supplied	95	64	86	89	244	129	140	76	78	89	225	362	1,677
Yards cleaned	80	61	174	146	92	64	81	70	55	45	34	45	947
Cellars cleaned	109	64	93	116	158	94	113	98	76	69	61	87	1,138
Cesspools cleaned	20	7	16	29	24	24	31	31	6	22	18	16	244
Water-closets cleaned and repaired	121	113	99	98	157	97	132	81	76	76	122	175	1,347
Number of places from which fowls were removed	3	3	6	5	5	6	7	7	6	3	4	4	59
Supply-pipes repaired	8	4	4	6	3	4	8	3	3	2	.	1	46
Privies cleaned and repaired	6	10	5	7	2	4	4	1	2	3	4	4	52
General want of cleanliness and repair	22	16	17	16	60	11	17	16	14	19	18	22	250
Exposed manure	2	1	6	2	6	6	9	5	3	.	3	1	44
Passageways cleaned	18	8	19	22	32	14	16	7	7	8	3	12	166
Sheds cleaned	7	2	5	6	7	7	9	3	6	2	4	1	59
Tenements whitewashed	3	1	14	199	913	284	313	61	15	28	67	78	1,976
Stables cleaned	2	.	.	3	6	3	4	9	3	3	1	1	35
Sundry nuisances	7	4	18	6	18	12	24	16	15	2	13	9	144
Rain-conductors repaired	12	4	4	5	10	13	8	11	12	15	5	2	101
Roofs repaired	6	1	5	9	15	9	5	7	1	4	3	3	68
Receptacles provided for garbage	3	3	7	5	7	3	5	2	3	1	.	1	40
Places from which swine were removed	.	1		3	2	2	2	4	1	7	1	2	25
Stagnant water removed from vacant lot	2	.	12	19	12	21	16	23	8	15	7	1	136
Vacant lots cleaned	5	2	3	6	7	2	4	2	6	1	.	1	39
Houses cleaned of dead rats	2	2	4	3	.	.	. .	3	.	3	3	. .	20
Overcrowded rooms	.	1	.	. .	3	. .	. .	.	.	1	.	3	8
Places from which goats were removed	.	.	.	. .	. .	. .	. .	.	2	.	1	.	3
Total	814	587	947	1,115	2,299	1,188	1,354	825	710	691	879	1,147	12,556

In addition to the foregoing there have been 894 complaints investigated where action by the board was found to be unnecessary.

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HOUSE-TO-HOUSE INSPECTION.

The house-to-house inspection of blocks selected in different parts of the city, including a few of the newest and best dwellings and more of the poorest, has been continued as usual, and with the result of finding very many bad conditions which were not suspected by the occupants of the houses.

The following tables show the result of this work: —

Section 1.

Forty-one wooden and seven brick houses, situated in Ward 3, about grade 40, in fair condition, occupied by a class of people in fair circumstances, numbering 294.

Number of houses in the block	48
" examined	48
" in which bad odors were perceptible	13
" in which defective drains were found	13
" in which defective trapping was found	4
" having privy vault on premises	12
" of such vaults found offensive	3
" having damp or unclean yards	0
" having damp or unclean cellars	0
" using furnaces	10
" furnaces without proper air-supply	1
" having water-closets	43
" having offensive water-closets	7
" having ventilation to soil-pipe or drain	13
" having offensive cesspools	0

Section 2.

Thirty-three brick houses, situated in Ward 1, about grade 55, occupied by a class of people in poor circumstances, numbering 213.

Number of houses in the block	33
" examined	33
" in which bad odors were perceptible	18

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Number in which defective drains were found	18
" in which defective trapping was found	9
" having privy-vault on premises	0
" of such vaults found offensive	0
" having damp or unclean yards	0
" having damp or unclean cellars	1
" using furnaces	11
" furnaces without proper air-supply	7
" having water-closets	33
" having offensive water-closets	3
" having ventilation to soil-pipe or drain	5
" having offensive cesspools	0

Section 3.

Thirteen wooden and sixteen brick houses, situated in Ward 14, about grade 60, occupied by a class of people in fair circumstances, numbering 205.

Number of houses in the street	34
" examined	34
" in which bad odors were perceptible	16
" in which defective drains were found	16
" in which defective trapping was found	5
" having privy-vault on premises	0
" of such vaults found offensive	0
" having damp or unclean yards	0
" having damp or unclean cellars	0
" using furnaces	30
" furnaces without proper air-supply	2
" having water-closets	34
" having offensive water-closets	0
" having ventilation to soil-pipe or drain	12
" having offensive cesspools	0

Section 4.

Twenty-one brick houses, situated in Ward 11, about grade 18, in good condition, occupied by a class of well-to-do people, numbering 144.

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Number of houses in the block	21
" examined	21
" in which bad odors were perceptible	1
" in which defective drains were found	3
" in which defective trapping was found	0
" having privy-vault on premises	0
" of such vaults found offensive	0
" having damp or unclean yards	0
" having damp or unclean cellars	0
" using furnaces	21
" furnaces without proper air-supply	0
" having water-closets	21
" having offensive water-closets	0
" having ventilation to soil-pipe or drain	21
" having offensive cesspools	1

Section 5.

Forty-five brick houses, situated in Ward 10, about grade 17, in fair condition, occupied by a class of people in fair circumstances, numbering 513.

Number of houses in the block	45
" examined	45
" in which bad odors were perceptible	24
" in which defective drains were found	17
" in which defective trapping was found	10
" having privy-vault on premises	0
" of such vaults found offensive	0
" having damp or unclean yards	0
" having damp or unclean cellars	2
" using furnaces	12
" furnaces without proper air-supply	5
" having water-closets	45
" having offensive water-closets	17
" having ventilation to soil-pipe or drain	4
" having offensive cesspools	0

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Section 6.

Twenty-five brick houses, situated in Ward 9, about grade 95, in good condition, occupied by a class of well-to-do people, numbering 263.

Number of houses in the street	25
" examined	23
" in which bad odors were perceptible	4
" in which defective drains were found	4
" in which defective trapping was found	1
" having privy-vault on premises	0
" of such vaults found offensive	0
" having damp or unclean yards	0
" having damp or unclean cellars	0
" using furnaces	21
" furnaces without proper air-supply	0
" having water-closets	23
" having offensive water-closets	0
" having ventilation to soil-pipe or drain	22
" having offensive cesspools	0

Section 7.

Seventy-seven brick and forty-five wooden houses, situated in Ward 9, about grade 55, in fair condition, occupied by a class of people in fair circumstances, numbering 910.

Number of houses in the street	122
" examined	118
" in which bad odors were perceptible	44
" in which defective drains were found	43
" in which defective trapping was found	27
" having privy-vault on premises	16
" of such vaults found offensive	5
" having damp or unclean yards	2
" damp or unclean cellars	8
" using furnaces	3
" furnaces without proper air-supply	1

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Number having water-closets	102
" having offensive water-closets	11
" having ventilation to soil-pipe or drain	37
" having offensive cesspools	2

Section 8.

Seventy-seven brick and fifteen wooden houses, situated in Ward 7, about grade 25, in fair condition, occupied by a class of people in fair circumstances, numbering 980.

Number of houses in the street	92
" examined	90
" in which bad odors were perceptible	38
" in which defective drains were found	40
" in which defective trapping was found	11
" having privy-vault on premises	7
" of such vaults found offensive	4
" having damp or unclean yards	2
" having damp or unclean cellars	8
" using furnaces	6
" furnaces without proper air-supply	2
" having water-closets	84
" having offensive water-closets	6
" having ventilation to soil-pipe or drain	23
" having offensive cesspools	3

Section 9.

Fifty-two brick and seven wooden houses, situated in Ward 8, about grade 30, in fair condition, occupied by a class of people in fair circumstances.

Number of houses in the street	59
" examined	59
" in which bad odors were perceptible	26
" in which defective drains were found	24
" in which defective trapping was found	14
" having privy-vault on premises	0
" of such vaults found offensive	0

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Number having damp or unclean yards	1
" having damp or unclean cellars	3
" using furnaces	7
" furnaces without proper air-supply	0
" having water-closets	59
" having offensive water-closets	9
" having ventilation to soil-pipe or drain	24
" having offensive cesspools	3

Section 10.

Thirty-seven brick and eighteen wooden houses, situated in Ward 6, about grade 25, in poor condition, occupied by a class of people in poor circumstances, numbering 959.

Number of houses in the street	55
" examined	55
" in which bad odors were perceptible	43
" in which defective drains were found	38
" in which defective trapping was found	24
" having privy-vault on premises	10
" of such vaults found offensive	6
" having damp or unclean yards	9
" having damp or unclean cellars	10
" using furnaces	2
" furnaces without proper air-supply	1
" having water-closets	46
" having offensive water-closets	5
" having ventilation to soil-pipe or drain	24
" having offensive cesspools	2

Section 11.

Fifty wooden and forty-four brick houses, situated in Ward 6, about grade 25, in poor condition, occupied by a class of people in poor circumstances.

Number of houses in the street	94
" examined	93
" in which bad odors were perceptible	67

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Number	in which defective drains were found . .	40
"	in which defective trapping was found . .	20
"	having privy-vault on premises . . .	40
"	of such vaults found offensive . . .	30
"	having damp or unclean yards . . .	2
"	having damp or unclean cellars . . .	9
"	using furnaces	0
"	furnaces without proper air-supply . .	0
"	having water-closets	54
"	having offensive water-closets . . .	13
"	having ventilation to soil-pipe or drain .	20
"	having offensive cesspools	0

Section 12.

Thirty-eight brick and thirty-seven wooden houses, situated in Ward 6, about grade 15, in poor condition, occupied by a class of people in poor circumstances, numbering 1,160.

Number	of houses in the street	75
"	examined	73
"	in which bad odors were perceptible . .	53
"	in which defective drains were found . .	32
"	in which defective trapping was found . .	33
"	having privy-vault on premises . . .	19
"	of such vaults found offensive . . .	17
"	having damp or unclean yards . . .	7
"	having damp or unclean cellars . . .	10
"	using furnaces	0
"	furnaces without proper air-supply . .	0
"	having water-closets	54
"	having offensive water-closets . . .	10
"	having ventilation to soil-pipe or drain .	19
"	having offensive cesspools	1

RECAPITULATION.

Whole number examined	692
Bad odors found in	347
Defective drains found in	288

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Defective trapping found in	158
Privy-vaults found	104
Offensive vaults found	65
Damp or unclean yards	23
Damp or unclean cellars	15
Using furnaces	123
Furnaces without proper air-supply	19
Water-closets found in	598
Offensive water-closets found in	81
Ventilation to soil-pipe or drain found in	224
Offensive cesspools found	12
Percentage of defective drains	41.6
Percentage of defective trapping	22.8
Percentage of unventilated drains	67.6

REMOVAL OF PRIVY-VAULTS.

The abolition of privy-vaults in streets supplied with sewers has been continued. The number abolished during the year is 707, as will be seen by reference to the following table: —

	1885.	1886.	1887.	1888.	1889.
Ward 1	19	97	70	48	24
" 2	79	96	90	92	41
" 3	31	83	54	38	14
" 4	48	56	53	25	53
" 5	26	55	46	30	25
" 6	22	19	43	27	50
" 7	10	52	50	23	49
" 8	60	170	104	37	15
" 9	40	77	41	26	11
" 10	9	18	5	1	2
" 11	6	16	1	1	1
" 12	40	56	18	4	16
" 13	61	164	87	83	78
" 14	29	99	71	49	28
" 15	79	65	16	16	19

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	1885.	1886.	1887.	1888.	1889.
Ward 16	28	42	27	14	39
" 17	18	62	5	3	8
" 18	3	4	10	6	6
" 19	40	48	28	37	40
" 20	56	77	19	48	15
" 21	14	37	31	17	7
" 22	21	65	60	24	24
" 23	2	29	40	15	20
" 24	43	68	70	83	68
" 25			17	13	53
	784	1,555	1,056	760	707

Total since the passage of the act . . . 4,862

The number of vaults and cesspools cleaned during the year by the Odorless Excavating Company was 2,302 : —

Charlestown . .	281	Roxbury . . .	353
South Boston . .	224	Boston Proper . .	509
West Roxbury and Brighton . .	278	Dorchester . .	441
		East Boston . .	216

The contract with the Odorless Excavating Company for the emptying of vaults expired on the 31st of December, 1889. In anticipation thereof, the board advertised for bids under a new contract from Jan. 1, 1890. On the 24th of December the contract was awarded to the " Odorless Excavating Company," who offered to do the work for the sum of six dollars per load of eighty cubic feet, in accordance with the terms of the following contract : —

This agreement, made this 24th day of December, A.D. 1889, between the City of Boston, first party, and "The Odorless Excavating Company," a corporation established by the laws of Massachusetts, second party, witnesseth : —

1. That the said company shall have and exercise the exclusive right and privilege, during the term of three years from Jan. 1, 1890, of

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taking and removing the contents, which are to be removed, of all vaults, privies, and cesspools, used as receptacles for night-soil in said city, and, for said work, shall furnish and employ such odorless apparatus, and such wagons, tanks, and barrels, as shall be satisfactory to the Board of Health of said city; said wagons to contain not less than eighty cubic feet each, as first measured and sealed by some sealer of said city; and said company shall not sell or assign its said privilege, nor any right or interest under this agreement, without the consent in writing of said board of health.

2. Said city shall, at its own expense, receive all applications for removing said contents, and, by notice signed by the clerk of said board of health, notify said company thereof.

3. Said company shall, every day except Sundays, during said term, send a person to the office of said board of health to receive the notices aforesaid, and shall, at the same time, report the number of cubic feet of such contents removed under each application during the preceding twenty-four hours.

4. Said company shall promptly, neatly, and thoroughly remove all such contents as they shall be notified of as aforesaid, by said odorless apparatus wherever practicable, and to the satisfaction of said board of health, within a reasonable time, and within forty-eight hours after receiving said notice, if so directed in the notice, and in accordance with the ordinances of said city relating thereto, which are now, or hereafter during said time may be, in force; provided, however, that the rate of compensation herein specified shall not be altered or affected by any ordinance of said city hereafter passed during said term. When the said board of health, on complaint of a person charged for such work, causes the same to be measured, and it measures less than as reported by said company, the company shall pay the cost of such measurement, and shall complete the work charged for.

5. The said company may demand and receive from applicants, or from any other person legally liable for said work, "and may require the same to be paid in advance, or deposited with said board of health," the sum of six dollars for each and every load of eighty cubic feet or fractional part of the contents of such vaults or cesspools removed by it; provided, that said vault or cesspool shall be thoroughly emptied by said company; but said city shall not be liable for any payment for such work unless done on premises owned or leased by it.

6. Said company shall not bring any such wagon, tank, or barrel, unless it be air-tight and odorless, within the limits of said city before ten o'clock in the evening, or keep the same within said limits later than until one hour before sunrise; shall not empty any of the contents thereof into any dock or stream in said city; shall, at its own expense, furnish and apply to every vault, privy, and cesspool cleaned by it as aforesaid, deodorizing material of such kind and in such quantity as said board of health shall require; shall leave said vaults, privies, and cess-

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pools covered and clean; shall not drop or leave any of the contents thereof on the premises about the same, nor in any street or way of said city; and shall reimburse said city for all damages and expenses it may suffer or incur by reason of such leavings or droppings, or the removal thereof.

7. The City of Boston may cancel this agreement in case of failure on the part of said company to perform all its said agreements to the satisfaction of said board of health.

HOUSES VACATED.

The number of houses ordered to be vacated for sanitary reasons during the year was 152, of which number only 33 were actually vacated; the others having been put in proper condition before the expiration of the time specified in the notice, the tenants were allowed to remain.

WET LANDS.

The territory bounded by the New York & New England Railroad, Willow court, Graham court, an irregular line from Graham court along the rear of Franklin court and Norfolk avenue, which has hitherto been the subject of frequent complaint on account of its bad sanitary condition, calls for some decided action by the city government if it is to continue to be occupied as a tenement-house district. It contains by estimation about 700,000 square feet of land, much of which is at about marsh level. Running through this land in the rear of Oakes street is a watercourse leading to South Bay, furnishing drainage for a water-shed of something like 500 acres. Into this watercourse much filth finds its way from tenement houses on Oakes street, Clapp street, and Willow court; also, at times, there is an overflow from the intercepting sewer in East Chester park. The tide backs up this watercourse often as far as Norfolk avenue, and sometimes beyond, through a culvert under the railroad, upon land in the vicinity of Dolan court. As the water backs up a portion of filth is forced along, which at a high tide is spread over the surface, more or less, according to the height of the tide. If it were not for the storm-water from the large water-shed, the

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tide could be kept back by properly constructed tide-gates; but constant care would be required to see that they did not get clogged up. But the greatest difficulty lies in the fact that when we have a heavy rainfall at a high tide the storm-water cannot go out below the level of the water in South Bay, and as a natural consequence this territory is covered with water to a great degree, causing a bad sanitary condition.

In view of the foregoing, the only practical way out of the difficulty seems to be to fill this land up to the level of high tide at a high course. Grade 14 would be none too high. To fill to a less grade would not be farsighted.

It is doubtful if the several owners of these lands could be induced to fill to a proper grade, and the only way to accomplish this would probably be by means of legislation giving the city a right to fill and assess expense and apply betterments.

INFANT BOARDING.

There are at present 12 registered infant boarding-houses, and they have reported 189 infants received. In former years it was only necessary, in order to take infants to board, that the person engaging in such occupation should notify the board of health within two days of the reception of each child; but if not more than two infants under three years of age were taken, no notification was required. In 1889, however, the following was enacted: —

[CHAP. 416, ACTS AND RESOLVES, 1889.]

AN ACT

TO PROVIDE FOR THE LICENSING OF PERSONS MAINTAINING BOARDING-HOUSES FOR INFANTS UNDER FIVE YEARS OF AGE.

Be it enacted, etc., as follows: —

SECTION 1. No person shall maintain a boarding-house for infants under the age of five years unless licensed by the board of health of the city or the selectmen of the town in which the same is located. Whoever violates the provisions of this section shall be punished by fine not exceeding one hundred dollars or by imprisonment not exceeding one year, or by both such fine and imprisonment.

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SECT. 2. Whoever shall for hire, gain, or reward have in his custody or control at one time more than three infants under the age of five years, unattended by a parent or guardian, for the purpose of providing care, food, and lodging for such infants, shall be deemed to maintain a boarding-house for infants within the meaning of this act.

SECT. 3. The board of health of cities and the selectmen of towns may grant a license to maintain a boarding-house for infants. Said boards of health and the selectmen of towns shall annually, and may at all times, visit and inspect premises so licensed, and may at any time designate any person to visit and inspect said premises. [*Approved June 5, 1889.*]

Under this new enactment a license is required, instead of a simple notification, and three children may be boarded outside the provisions of the law, instead of two as formerly. This latter change defeats, to a certain degree, the intention of the act, since it allows designing persons to keep within the number designated, and yet be without the jurisdiction of any governing board. A return to the old limit would be a desirable amendment to the present law.

An ingenious way of circumventing the law has been found in adopting a certain number of children. These infants then become, to all intents and purposes, the legal offspring of the person adopting them, and are, therefore, not included in the number of boarders. The final disposition of such children has been considered as of interest only to the person adopting them, and the board of health has no means of compelling information as to their whereabouts. Again, while the law requires registration of the arrival of each infant, there is no provision calling for notification of its death or discharge. This is an unfortunate omission, as it is impossible in the majority of cases to identify a nursing infant, and the inspector is unable to tell, on making a second or third visit to the house, whether he sees the same children or others of corresponding ages. He is, therefore, unable to form any just estimate of the degrees of emaciation, of neglect, or of the mortality of the boarders. During the year just passed, twelve licenses to keep infant boarding-houses have been granted and one refused. There have been 189 infants reported as having been received at these establishments.

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The medical inspector visits these houses at frequent intervals. Whenever complaints, anonymous or otherwise, have been received, due attention has been given them. It is often a matter of extreme difficulty, however, to act with strict justice toward all parties. Charitably disposed persons honestly believe that children in a certain house are not receiving the care that should be given them. The inspector on visiting the place is unable fully to determine that they have been neglected. He is then obliged either to allow matters to proceed as before, or else, by an adverse report, to deprive the licensed keeper of her means of subsistence. Many of these women are quite poor, and support themselves and their children by the income derived from their occupation. It would be a hardship to take away their means of livelihood without good and sufficient reasons for so doing. The Board recognizes the fact that the conditions in many of these houses are not the best for infant life. The keepers, on account of their poverty, are compelled to live in tenement houses; the apartments are often more or less crowded; the food is procured from a corner grocery, and is prepared by women who, if well-meaning, are often ignorant and always unscientific. Yet with all these drawbacks the mortality is not greater than in the larger and better-appointed institutions.

It would seem that in a city like Boston there should be at least one free foundling hospital. Yet there is not in Boston a single institution in which a destitute mother may place her child. If better facilities were offered for the care of nursing infants, not only the present total disregard of fœtal life might not exist, but there would be also fewer cases of abandoned children and even of infanticide. There are very many young mothers who are able to support themselves if not burdened by the child, but who are unable to spare from their small earnings even the pittance required by the infant boarding-house keeper.

LICENSES.

The number of persons licensed to collect grease is 96.

The number licensed to peddle fish is 737.

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LYING-IN HOSPITALS.

During the year 173 confinements have taken place in the licensed hospitals, and 1 death has been reported.

These hospitals have been regularly visited and inspected by the medical inspector. The following is a list of the places so licensed: —

New England Hospital, Dimock street.
St. Mary's Infant Asylum, Cushman avenue, Dorchester.
J. M. Twitchell, 134 Dorchester street, South Boston.
New England Moral Reform Society, 476 Shawmut avenue.
J. A. Woodbury, 706 Fifth street, South Boston.
Dr. John W. Johnson, 20 Worcester street.

CEMETERIES.

The 17 cemeteries under the control of the board of health, comprising 37½ acres, have been well cared for by the superintendents in charge.

Of the territory embraced within these grounds, about 5¾ acres are contained in King's Chapel, Granary, Central, and Copp's Hill, the first three of which, being centrally located and upon crowded thoroughfares, are naturally objects of note and interest. Concerning these grounds, Mr. L. W. Ross, custodian, *vice* Mr. John Reardon, deceased, has submitted a communication to the board of health, from which the following extracts are quoted: —

I respectfully beg leave to submit for your consideration the following suggestions for the improvement of the several burial grounds in your department under my care. I make these recommendations because of a sincere desire to see these grounds (particularly the Granary, King's Chapel, and the Central) placed in such condition as will render them objects of interest to our citizens and visitors, making them spots of beauty in the heart of the city, an ornament to Boston, and a credit to those in charge of them. I am persuaded, after a careful estimate, that this can be accomplished by the judicious expenditure of about $3,000. . . . I cannot help feeling that Boston can afford to do this, although, perhaps, under no legal obligation so to do. I would suggest that the money be used in this way: Remove one-half, or more, of the trees, reserving the best, which will, in a few years of proper care,

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develop into good specimens, which is an impossibility under present conditions, as they are so crowded as to be in each other's way; by this means the sun and air will be freely admitted. The entire ground should then be worked over and enriched. . . . Then sow with grass-seed, which will, in a short time, cover the ground in good shape, and remain so, which would not obtain except on the removal of superfluous trees. I would advise the planting of vines to cover unsightly walls, the bare trunks of trees, etc.

These suggestions, as a whole, seem to be worthy of consideration. While the expenditure of so large a sum as $3,000 may not seem advisable, much can be accomplished with a less amount, which, expended in the judicious manner proposed by superintendent Ross, would produce results satisfactory to all citizens and tax-payers.

Annoyance has been caused by the surreptitious deposit, within several of the enclosures, of waste-paper and refuse which have occasioned an unsightly appearance. The police have been notified, and arrests will be followed by a vigorous prosecution of the offenders.

During the year the department was deprived of the services of two competent officials. Mr. John Reardon, whose skill as gardener had for ten years been displayed in his care of the cemeteries placed in his charge, died August 1, at the age of 70.

Mr. George Fowler resigned, on November 21, the care of the Dorchester North Cemetery, after faithfully serving for nearly twenty-eight years.

Following is his letter of resignation: —

DORCHESTER, Nov. 21, 1889.

To the Board of Health of the City of Boston: —

DEAR SIRS, — As I have made up my mind to resign my position as Superintendent of the North Cemetery, Dorchester District, I wish it to take effect Nov. 30, 1889. After serving in that capacity for twenty-seven years and eight months, I feel that the responsibility is too much, considering my health and age, which is seventy-seven years and nine months. I was appointed by the Selectmen of Dorchester, April 1, 1862. In the year 1869, appointed by the city of Boston. I consider everything about the cemetery in good order, gravestones righted up and cleaned, iron gates painted, fence whitewashed, and other improvements too numerous to mention.

Respectfully yours,

GEORGE FOWLER.

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A considerable expense ($590.75) has been entailed during the year in repairing the walls of the Copp's Hill grounds, and it is probable that a greater sum will be required during the coming spring, as a large section of the wall is in precarious condition. The fence enclosing the Dorchester North ground has been supported by braces in several places, but it is so decayed that it must soon be replaced.

Following is a list of interments made during the year 1889 in the cemeteries: —

Calvary	1,919	*Dorchester South	19
Mt. Hope	1,652	Ohabei Shalom	9
Forest Hills	743	Codman	20
Woodlawn	797	Gethsemane	4
Mt. Auburn	536	Walk Hill	2
Cedar Grove	374	*Bunker Hill, Protestant	7
*Bennington-st., E.B.	142	*Copp's Hill	4
St. Augustine	86	St. Mary's	1
*Phipps-st. Ground	120	*King's Chapel Ground	2
*Central Ground	53	*Granary Ground	3
*Dorchester North	38	*South Ground	3
Union Ground	45	Dorchester, Roman Catholic	620
Mt. Benedict	706	*Westerly	1
*Evergreen	64		
Bunker Hill, Roman Catholic	44		

STABLES.

Prior to the past year, permits for the occupancy of stables for horses have been granted by the Board of Aldermen. In March last, however, an act was passed by the legislature transferring this duty to the board of health. Following is the act referred to: —

Be it enacted, etc., as follows: —

SECTION 1. No person shall hereafter occupy or use any building in the city of Boston for a stable unless first authorized thereto by the board of health of said city, and in such case only to the extent so authorized, provided that this act shall not prevent any such occupation

*In charge of the board of health.

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and use authorized by law at the time of the passage of this act, to the extent so authorized.

SECT. 2. Any person violating any provision of this act shall be liable to a fine not exceeding five dollars for each and every day that such violation continues, and any court having jurisdiction in equity may restrain such use and occupation.

SECT. 3. Chapter three hundred and sixty-nine of the acts of the year eighteen hundred and sixty-nine, chapter one hundred and ninety-two of the acts of the year eighteen hundred and seventy-eight, and all acts and parts of acts inconsistent herewith are hereby repealed.

SECT. 4. This act shall take effect upon its passage. [*Approved March 8, 1889.*]

In accordance with the provisions of this act, 230 petitions were considered, and 224 acted upon by the board, 196 being granted. At the request of remonstrants, hearings were had in 72 cases, of which number 40 were granted, 28 refused, 3 withdrawn pending action, while 3 remain unsettled. In addition to the requirements hitherto insisted upon, the regulations of this board make it incumbent on those to whom permits for stables are granted to locate their manure-pits under the stable, in order that the loading of the manure may be done inside the building; and these pits must be constructed of brick and stones laid in cement. It is also required that the drainage and ventilation shall be made satisfactory to this board.

PUBLIC BATHS.

Owing to the comparatively cool summer, the number of persons who patronized the public bathing-houses during the bathing season was not so large as usual, although it exceeded three-quarters of a million. The following table shows the number of bathers at each of the bathing-houses during the season, and the number for the previous season, as reported by the superintendents: —

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	1888.	1889.
For Men.		
West Boston Bridge, foot of Cambridge street	51,477	60,209
Craigie's Bridge, foot of Leverett street,	62,470	51,878
Charles-river Bridge, near Causeway street	53,382	68,640
East Boston, Sectional Dock, Border street	35,154	30,065
Mt. Washington-avenue Bridge, near Federal street	57,341	62,284
South Boston, foot of L street, Dorchester Bay	178,603	159,772
Dover street, at South Pier	72,907	75,041
East Boston, Maverick street	42,267	28,535
Chelsea Bridge, Charlestown	35,176	47,232
Malden Bridge	36,917	40,488
For Women.		
Charles-river Bridge, near Causeway street	49,170	50,450
East Boston, Sectional Dock, Border street	24,482	22,006
South Boston, foot of M street	37,209	38,841
Dover street, at South Pier	19,196	18,115
Commercial Point, Dorchester	13,036	12,554
Chelsea Bridge, Charlestown	10,815	9,923
Malden Bridge	4,783	4,711
Total, men and boys	625,694	624,144
Total, women and girls	158,691	156,600
Total of both sexes	784,385	780,744

During the bathing season twelve men and nine women were employed to superintend the houses, and seven men were employed as special officers to preserve order at the houses where the crowds were generally the largest.

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During the autumn months the work of repairing the old houses and building a new house has been in progress, but this work has now been suspended until spring. A floating bath-house of larger proportions than the ordinary pattern has been erected, which will be moored on the Charles river, in close proximity to the open-air gymnasium, which is maintained there by the Park Department. It will be an excellent adjunct of that institution, and will, no doubt, be appreciated by those who like to take a plunge in the salt-water after exercising in the gymnasium.

PUBLIC URINALS.

No additional public urinals have been erected during the year, although numerous requests have come to us for supplying such accommodations in several sections of the city. The only reason why these requests have not been complied with is because the appropriation of the department would not permit the outlay that would be involved. According to the estimates furnished by the builders of the small iron urinals now maintained by the board, each of these structures cost $275, without reckoning the expense of setting them on proper foundations and furnishing the necessary plumbing. The entire expense of erecting these small urinals is about $525, exclusive of the cost of maintaining them. The larger structures are far more expensive, of course, costing about $1,200, but they are greatly to be preferred in the more populous sections. We renew the recommendations hitherto made by this board that a sufficient appropriation be granted to enable the board to increase these accommodations, thus meeting what is unquestionably a popular and reasonable demand.

The expense of maintaining the nineteen urinals now in use during the past year has been $6,000. This sum covers the cost of superintendence, water-rates, painting, and other necessary repairs.

QUARANTINE.

The usual work of inspection in this department has been continued through the year. No unusual sickness, like

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cholera or yellow fever, has been found on board any vessel since our last report, and there have been but few cases of the commoner forms of disease found which required removal from the vessel to the quarantine hospital. There have also been but few vessels which required disinfection and general cleaning up. A detailed account of the work for the year will be found in the appended report of the port physician.

During the summer the sea-wall which partially surrounds Gallop's Island has been extended 300 feet by the national government, and the serious inroads which the heavy seas had made on the south-western extremity of the island have been, in a measure, arrested, though the further extension of the wall for a distance of at least seventy feet will have to be completed before the washing away of the beach can be entirely stopped. It is gratifying to be able to state that the necessity of such an extension of the work is fully recognized by the United States engineer in charge of the Massachusetts district, and that an appropriation has been asked for from Congress sufficient to complete the work, thereby saving the city's property, and at the same time preserving the adjacent channels for the shipping.

APPOINTMENTS.

On the first Monday in May Edwin L. Pilsbury succeeded William Taylor as a member of this board.

The board organized by the choice of Samuel H. Durgin, M.D., as chairman, and Charles E. Davis, Jr., as clerk.

On the 24th of September, Alexander Burr, V.S., was appointed inspector at the abattoir in place of George W. Boynton.

Respectfully submitted,

SAMUEL H. DURGIN, M.D.,
Chairman.
GEORGE F. BABBITT,
EDWIN L. PILSBURY,
Board of Health.

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FINANCIAL STATEMENT.

Total appropriation	$109,000 00
Appropriation for board of health	$75,000 00
Expended to date	58,397 77
Balance applicable to the remaining four months of the financial year	$16,602 23

PUBLIC BATHS.

Appropriation	$16,000 00
Expended to date	14,011 20
Balance	$1,988 80

QUARANTINE.

Appropriation	$16,500 00
Expended	13,275 23
Balance	$3,224 77

EVERGREEN CEMETERY.

Appropriation	$1,500 00
Income, sale of lots and care	935 86
	$2,435 86
Expended	2,245 36
Balance	$190 50

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REPORT OF THE CITY PHYSICIAN.

CITY PHYSICIAN'S OFFICE,
BOSTON, Jan. 1, 1890.

To the Board of Health: —

GENTLEMEN, — I have the honor to submit the following report of this office for the year ending Dec. 31, 1889: —

There have been 3,087 persons vaccinated, and certificates of vaccination have been given to 1,856 children for their admission to the public schools. In every instance where a case of small-pox has occurred, all in the immediate vicinity exposed to the disease have been vaccinated. There has also been a careful medical supervision of the infected localities, until all danger of an outbreak of this disease had passed. A table is appended, showing the number vaccinated from the year ending April 30, 1873, to the year ending Dec. 31, 1889.

Three hundred and twenty-five men have been examined at the request of the Civil-Service Commission for appointment in the Police and Fire Departments. At the request of the Board of Police eight men have been examined for retirement, and three cases of supposed injury or disease investigated. At the request of the Board of Fire Commissioners fifteen men were examined for retirement, and two cases of injury investigated.

The bodies of 553 persons dying without a physician in attendance have been examined. These cases comprise, principally, those who die of chronic diseases, where there has been no medical care for months previous to death, and those who die suddenly from natural causes. In these cases a careful external examination is made, the symptoms learned, and a diagnosis, sufficiently accurate for all practical purposes, reached. The law requires a medical certificate of death before a permit for burial is granted, and these examina-

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tions are made to conform to the law, as well as to collect statistics for the bills of mortality. A tabular statement is appended.

Fifty-four cases of eruptive diseases, reported as small-pox, have been examined. Ten of these were found to be small-pox. Two deaths have occurred from this disease during the year. The statement of the remaining 44 reported cases is as follows: Varicella, 22 cases; measles, 13; eczema, 3; artificial eczema, 1; urticaria, 1; vaccinal urticaria, 1; syphilis, 3.

CITY PRISON.

A visit has been made every Sunday morning to this institution. The following diseases have been treated: Delirium tremens, 8 cases; fractures, 2; incised wounds, 3; scalp wounds, 3; contusions, 4; sprains, 2.

SUFFOLK COUNTY JAIL.

In this institution there have been 799 patients treated during the year, requiring 1,918 visits. No death has occurred during the year. On the 17th of December an epidemic of influenza appeared at the jail. The disease was, in some instances, of a severe type; but in no case did pneumonia supervene. Otitis and severe and persistent supra-orbital neuralgia in a few instances followed the attack. A tabular statement is appended.

CITY TEMPORARY HOME.

At this institution 128 visits have been made during the year. Three cases of confinement have been attended; two of the children were born alive, one was still-born. Two deaths have occurred during the year. The following diseases have been treated: Cholera-infantum, delirium tremens, diarrhœa, diphtheria, ophthalmia neonatorum, pneumonia, puerperal condition, scarlet fever, whooping-cough. Seven patients were sent to the City Hospital.

There has been a supervision of the cases of diphtheria and scarlet fever occurring during the year, with a view to em-

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phasize the importance of isolation, and also to facilitate the removal of patients to the City Hospital. This work has taken a very considerable amount of time, as there have been 1,814 cases of diphtheria and 464 cases of scarlet fever reported. These diseases have not been confined to any particular locality, but have been found throughout the whole extent of the city.

Dr. Morton Prince, Assistant City Physician, and Dr. William G. Macdonald, Medical Inspector, have been prompt and efficient in the performance of the duties pertaining to their respective departments.

Respectfully submitted,

JOHN H. McCOLLOM,
City Physician.

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A Tabular Statement of the Vaccinations at the City Physician's Office, from the Year ending April 30, 1873, to the Year ending Dec. 31, 1889.

YEAR.	Number.	Remarks.
April 30, 1873	2,401	3,367 cases of small-pox.
" 30, 1874	485	32 " " "
" 30, 1875	673	5 " " "
" 30, 1876	931	3 " " "
" 30, 1877	1,287	6 " " "
" 30, 1878	2,078	9 " " "
" 30, 1879	1,984	
" 30, 1880	2,497	1 case " "
" 30, 1881	2,841	3 cases " "
" 30, 1882	12,001	65 " " "
" 30, 1883	1,412	5 " " "
" 30, 1884	1,577	5 " " "
December 31, 1885	2,140	6 " " "
" 31, 1886	1,781	1 case " "
" 31, 1887	2,044	4 cases " "
" 31, 1888	3,677	8 " " "
" 31, 1889	3,087	10 " " "

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Report of the Causes of Death investigated by the City Physician for the Year ending Dec. 31, 1889.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
I. — Zymotics.													
Cholera infantum	.	. .	. .	. .	1	5	14	19	6	. .	1	. .	46
Cholera morbus	. .	.	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	1
Diphtheria	. .	1	3	1	. .	1	. .	. .	. .	. .	. .	. .	6
Pertussis	1	2	. .	. .	. .	1	2	4	2	. .	. .	1	13
Pyæmia	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	1
Scarlet fever	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1
Typhoid fever	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. .	. .	1
II. — Constitutional.													
Cancer	1	1	. .	1	. .	. .	2	3	. .	. .	. .	3	11
Marasmus	2	6	5	6	2	10	10	5	11	10	3	2	72
Phthisis pulmonalis	5	5	6	9	7	1	5	14	2	9	5	13	81
Tubercular meningitis	. .	. .	1	1	.	. .	2	. .	1	1	. .	1	7
Other constitutional diseases	. .	. .	2	. .	. .	. .	. .	. .	. .	. .	. .	. .	2
III. — Local.													
Apoplexy	9	7	4	5	3	3	4	3	2	3	1	4	48
Bright's disease	2	4	. .	1	. .	1	. .	2	1	2	1	2	16
Bronchitis	1	. .	. .	2	3	. .	. .	1	. .	. .	. .	2	9
Heart disease	1	5	4	4	4	4	6	4	5	3	2	6	48
Meningitis	1	. .	. .	. .	2	. .	1	. .	. .	2	1	. .	7
Pneumonia	3	5	8	7	3	1	. .	1	2	2	7	7	46
Other local diseases	1	1	. .	. .	. .	1	2	2	. .	1	2	. .	10
IV. — Developmental.													
Cyanosis	. .	. .	. .	. .	. .	. .	. .	. .	2	. .	1	. .	3
Inanition	5	4	. .	1	1	6	4	8	3	3	4	2	41
Carried forward	33	41	33	38	26	35	53	66	37	37	28	43	470

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REPORT OF THE CAUSES OF DEATH. — *Concluded.*

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Brought forward	33	41	33	38	26	35	53	66	37	37	28	43	470
Old age	1	. .	. .	. .	. .	. .	1	4	. .	. .	1	1	8
Premature birth	2	1	3	2	2	1	3	2	. .	. .	1	2	19
V. — Violent.													
Accidental suffocation by piece of meat in trachea	. .	. .	. .	. .	. .	1	. .	. .	1	. .	. .	. .	2
Overlaid	. .	. .	. .	. .	. .	. .	. .	. .	. .	2	. .	. .	2
Total	36	42	36	40	28	37	57	72	38	39	30	46	501
Referred to the Medical Examiner	. .	. .	2	. .	. .	. .	1	. .	1	. .	. .	1	5
Still-births	3	5	. .	5	9	4	2	4	6	3	3	1	45
Unknown	. .	. .	. .	. .	. .	. .	. .	2	. .	. .	. .	. .	2
Grand total	39	47	38	45	37	41	60	78	45	42	33	48	553

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Report of the Sick at Suffolk County Jail for the Year ending Dec. 31, 1889.

DISEASES.	Remaining Jan. 1, 1889.	Treated during the year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Asylum.	Discharged from custody.	Remaining Dec. 31, 1889.
General Diseases: —								
Anæmia	...	2	...	1	...	...	1	...
Erysipelas	...	1	1	...	...	...	...	...
Febricula	...	23	23	...	...	...	...	...
Fever, intermittent	...	6	4	2	...	...	...	...
Fever, remittent	...	1	1	...	...	...	...	...
Influenza	...	91	85	...	...	...	...	6
Phthisis pulmonalis	1	8	...	3	...	...	6	...
Rheumatism, acute	...	5	5	..	...	...	...	...
Rheumatism, chronic	1	19	...	18	...	...	2	...
Functional Diseases of the Nervous System: —								
Delirium tremens	2	61	59	...	...	...	3	1
Epilepsy	...	3	...	1	...	...	2	...
Neuralgia	...	17	5	11	...	...	1	...
Diseases of Intellect: —								
Dementia	...	1	...	...	...	...	1	...
Mania	...	1	...	...	...	1	...	...
Diseases of Bronchi: —								
Bronchitis, acute	...	27	27	...	...	...	...	...
Bronchitis, chronic	...	4	...	4	...	...	...	...
Diseases of Lungs: —								
Pneumonitis	...	3	3	...	...	...	...	...
Diseases of Fauces: —								
Tonsillitis	2	14	13	...	...	...	3	...
Diseases of Kidney: —								
Bright's disease	...	1	...	...	...	...	1	...
Diseases of Digestive System: —								
Colic	...	19	19	...	...	...	...	...
Constipation	...	89	89	...	...	...	...	...
Diarrhœa	...	42	41	...	...	...	1	...
Carried forward	6	438	375	40	...	1	21	7

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REPORT OF THE SICK AT SUFFOLK COUNTY JAIL.— *Continued.*

DISEASES.	Remaining Jan. 1, 1889.	Treated during the year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Asylum.	Discharged from custody.	Remaining Dec. 31, 1889.
Brought forward	6	438	375	40	. . .	1	21	7
Functional Diseases of Women :—								
Dysmenorrhœa	. . .	1	. . .	1	. . .	. . .	. . .	. . .
Menorrhagia	. . .	1	. . .	1	. . .	. . .	. . .	. . .
Pregnancy	. . .	1	. .	. . .	. . .	. . .	1	. . .
Diseases of the Cutaneous System :—								
Eczema	. . .	9	1	8	. . .	. . .	. . .	. . .
Erythema intertrigo	. . .	1	. . .	. . .	. . .	. . .	1	. . .
Herpes zoster	. . .	3	3	. . .	. . .	. . .	. . .	. . .
Lichen tropicus	. . .	2	2	. . .	. . .	. . .	. . .	. . .
Onychia	. . .	1	1	. . .	. . .	. . .	. . .	. . .
Phthiriasis	. . .	13	12	1	. . .	. . .	. . .	. . .
Psoriasis	. . .	2	. . .	1	. . .	. . .	1	. . .
Scabies	. . .	4	4	. . .	. . .	. . .	. . .	. . .
Diseases of the Eye :—								
Conjunctivitis	. . .	3	2	. . .	. . .	. . .	1	. . .
Iritis	. . .	1	. . .	. . .	. . .	. . .	1	. . .
Poisons :—								
Opium habit	. . .	5	. . .	. . .	. . .	. . .	5	. . .
Surgical Diseases :—								
Abscess	2	27	26	. . .	. . .	. . .	3	. . .
Fistula in ano	. . .	1	. .	1	. . .	. . .	. . .	. . .
Gonorrhœa	2	27	19	4	. . .	. . .	6	. . .
Hæmorrhoids	. . .	3	. . .	3	. . .	. . .	. . .	. . .
Otitis	. . .	4	4	. . .	. . .	. . .	. . .	. . .
Prostatitis	1	. . .	. . .	1	. . .	. . .	. . .	. . .
Stricture, urethral	. . .	3	. . .	2	. . .	. . .	1	. . .
Syphilis	2	21	. . .	15	. . .	. . .	7	1
Varix	. . .	2	. . .	. . .	. . .	. . .	2	. . .
Injuries :—								
Abrasions	. . .	1	1	. . .	. . .	. . .	. . .	. . .
Contusions	1	14	11	. . .	. . .	. . .	4	. . .
Dislocations	. . .	1	. . .	. . .	. . .	. . .	1	. . .
Carried forward	14	589	461	78	. . .	1	55	8

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REPORT OF THE SICK AT SUFFOLK COUNTY JAIL. — *Concluded.*

DISEASES.	Remaining Jan. 1, 1889.	Treated during the year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Asylum.	Discharged from custody.	Remaining Dec. 31, 1889.
Brought forward	14	589	461	78	. . .	1	55	8
Fractures	1	5	1	2	1	. . .	2	. . .
Sprains	. . .	1	1	. . .	. . .	. . .	. . .	. . .
Wounds, gunshot	. . .	2	1	. . .	. . .	. . .	1	. . .
Wounds, incised	. . .	10	9	. . .	. . .	. . .	1	. . .
Wounds, punctured	. . .	2	2	. . .	. . .	. . .	. . .	. . .
Wounds, scalp	. . .	22	17	. . .	. . .	. . .	5	. . .
Total	15	631	492	80	1	1	64	8
Malingering	. .	153	152	. . .	. . .	. . .	1	. . .
Grand total	15	784	644	80	1	1	65	8

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REPORT OF PORT PHYSICIAN.

QUARANTINE STATION,
BOSTON HARBOR, Jan. 1, 1890.

To the Board of Health: —

GENTLEMEN, — I have the honor to submit the following report of the Quarantine Department for the year ending Dec. 31, 1889: —

Quarantine has been enforced on vessels bringing foreign immigrants during the year. The quarantine on vessels bringing rags, which has been in force for several years, was removed February 1. From June 1 to October 31, inclusive, all vessels arriving from the following ports were subject to quarantine: From any port in Europe, Western Madeira, Canary or Cape de Verde Islands; from the Mediterranean or straits thereof, the west coast of Africa, or around the Cape of Good Hope; from the West India, Bahama, or Bermuda Islands; and from any American port south of Virginia. On January 17, a sailor sick with typhoid fever was removed from the steamer "Naranja" to the quarantine hospital on Gallop's Island, and with him was taken his clothing and bedding for disinfection. On January 30, a cattleman who had been sick for eighteen days with typhoid fever was removed to Gallop's Island from the steamer "Hibernian;" his bedding and clothing were also removed for disinfection. On April 15, the steamer "Carthaginian" arrived at quarantine, having had a case of diphtheria on board. The hospital in which the child had been isolated during its entire illness was thoroughly fumigated, and the steamer allowed to proceed without delay. On April 18, two steerage passengers were removed from the steamer "Kansas," one sick with typhoid

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fever, and the other for observation. The ship's hospital was fumigated for eight hours, and the clothing and bedding taken to Gallop's for disinfection. On May 23, a case of measles was removed from the steamer "Austrian." The disinfection was done by the ship's surgeon. On July 5, the bark "Sarah" arrived, having had a case of measles on the voyage. The bark was fumigated for eight hours, and allowed to proceed to the city. On July 26, the schooner "A. E. Rickerson," eighteen days out from Miragoane, with a cargo of logwood, arrived at quarantine. Although there was no sickness on board of a contagious character, the schooner was in such a dirty and unwholesome condition that she was detained for twenty-four hours and thoroughly cleaned and fumigated. On August 2, the schooner "D. W. McLean," sixteen days out from Maracaibo, anchored at quarantine and reported a death from yellow fever on the fifth day out. The schooner was detained twenty-four hours while the cabin and forecastle were fumigated and washed with a solution of corrosive sublimate. All the clothing and bedding aboard was steamed. On August 19, a child and its mother were removed from the steamer "Catalonia" to Gallop's Island, the mother refusing to have the child vaccinated. The following day the father came down from the city, when, by his consent, the child was vaccinated and discharged.

On August 22, the bark "S. B. Hale," twenty-one days out from Milk River, arrived at quarantine, and reported the death of the captain from yellow fever. The cabin and forecastle were fumigated for eight hours, and afterwards washed with a solution of corrosive sublimate; the clothing and bedding were steamed, and after a detention of twenty-four hours the bark was allowed to proceed. On September 2, the brig "Matilda Buck," twenty-nine days from Hayti, arrived, reporting the death of the mate from yellow fever. The brig was detained at quarantine for twenty-four hours, the cabin and forecastle thoroughly fumigated and washed with a solution of corrosive sublimate, the clothing and bedding being steamed. On September 9, a case of measles was removed from the steamer "Pavonia," and the compartment in the steerage from which the patient was removed fumi-

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gated, without any detention to the steamer. On October 14, the steamer "Pavonia" arrived, having had two cases of measles on the voyage. Both were convalescent, so they were not removed. The hospital where the cases had been isolated was fumigated, and the ship allowed to proceed. On October 27, two cases of measles were removed from the steamer "Catalonia;" the steamer's hospital was fumigated for six hours, and the ship allowed to proceed. On December 2, one of the stewards on the steamer "Catalonia" was removed to the hospital on Gallop's Island, sick with scarlet fever in the stage of desquamation. All his clothing and bedding were removed at the same time for disinfection. The steamer's hospital was fumigated for eight hours, and the ship allowed to proceed.

All other vessels boarded were free from contagious diseases, and in good sanitary condition.

The vessels boarded during the year were from the following ports: —

West Indies	180	Liverpool	137
Coastwise	86	South America	44
Antwerp	17	Glasgow	26
London	17	Hull	14
Mediterranean ports	10	Azores	11
Bermuda	1	Hamburg	3
Madagascar	3	Sicily	1
Manilla	2	Spain	3
Mexico	6	Port Elizabeth	2
West Coast Africa	4	Singapore	4
Calcutta	1		
Total number of vessels boarded			573

Classified as follows: —

Steamers	336
Barks	67
Ships	5
Brigs	40
Schooners	125
Total	573

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Number of vessels fumigated, 12, classified as follows: —

Steamers	7
Barks	2
Brigs	1
Schooners	2
Total	12

Number of persons removed from vessels	10
Number of persons vaccinated	315
Number of vessels boarded on account of having rags as cargo	18

The receipts of the department have been as follows: —

Quarantine Fees, Steamers, 336 @ $8.00,	$2,688 00		
" " Barks, 67 " "	536 00		
" " Ships, 5 " "	40 00		
" " Brigs, 40 " $5.00,	200 00		
" " Schooners, 125 " "	625 00		
		$4,089 00	
Fumigating 10 vessels @ $10.00	$100 00		
" 2 " " 15.00	30 00		
		130 00	
Vaccinating 315 persons @ 25c.	$78 75	78 75	
For board and medical attendance of State paupers	334 00	334 00	
		$4,631 75	
Turned in to City Collector	$4,603 75		
Bills uncollected	28 00		
		$4,631 75	
Cash on hand from last year		$84 25	

In addition to the above amount of cash, bills amounting to $201, for board and medical attendance of State paupers in the quarantine hospitals at Gallop's Island, have been turned over to the City Collector for collection. The falling-off of the receipts from last year, which you will notice is

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quite considerable, was due to the removal of quarantine, in the early part of the year, from vessels having rags as part of their cargo.

The number of immigrants inspected during the year, 35,502, while above the average for the past ten years, still falls short by nearly 10,000, of the number inspected in 1888. May 6, 1,418 passengers were inspected on the Cunard steamer "Catalonia," the largest number ever inspected on one ship at this station.

The past year has brought a much-needed improvement to Gallop's Island, — an extension, by the United States government, of 300 feet to the south-west end of the sea-wall. This will be of great benefit in protecting the western bluff; but a still further extension is needed to prevent the washing away of the southern road and embankment in front of the hospitals.

The house chimneys at Gallop's have been rebuilt from the roof up. The underpinning of both hospitals has been relaid, the wards given two coats of paint, and all the stoves thoroughly repaired.

The produce of the island was increased considerably over that of previous years. The potato crop, however, was a failure: —

Potatoes, 150 bushels.	Hay, 16 tons.
Barley, 30 "	Corn-fodder, 2 tons.
Onions, 18 "	Barley, 1½ tons.
Squash, 400 lbs.	Mangels and carrots, 90 bu.

And enough garden vegetables, in their season, to supply the island and quarantine steamer. All the milk and eggs used by both were supplied from the island.

The live-stock at present consists of one horse, three cows, five hogs, and one hundred and five hens and chickens.

The quarantine steamer "Vigilant" is in good repair, and has been kept so at a moderate cost. Last spring new pistons were put in the cylinders, and a new propeller purchased.

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This department is indebted to Mr. Gerrish, Superintendent of the House of Industry, for many favors during the past year. I take this opportunity to offer him my sincere thanks. I also desire to thank the Board of Health for the kindness and consideration shown me.

Respectfully submitted,

CHARLES H. COGSWELL, M.D.,
Port Physician.

NORTH GROVE-STREET MORGUE.

To the Board of Health: —

GENTLEMEN,— I have the honor to report that, for the year 1889, there were received at the North Grove-st. Morgue, one hundred and two bodies of persons deceased. Of these, twelve were unidentified at the time of reception, and of these, four were subsequently identified.

There were twenty-eight autopsies made by the Medical Examiner and his associate, at which I assisted.

The building is in good condition, with the exception of front wall, which can be repaired at a small expense the coming spring.

I have the honor to be, very respectfully,

F. L. BRIGGS,
Supt. of North Grove-st. Morgue.

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BRIGHTON ABATTOIR.

January 1, 1890.

To the Board of Health: —

Gentlemen, — I have the honor to submit the following report of the inspection at the Abattoir, for the three months ending Dec. 31, 1889: —

On assuming this position, Oct. 1, 1889, I found that the tenants had been accustomed to a simple inspection, which consisted principally of an examination of the dressed meats. They were unprepared to see a professional examination of the animal while alive, and of all the internal organs during the process of dressing. Under the present rules, all lungs have not been examined with the corresponding carcass while being dressed, as the butchers are not obliged to save them; but such as have not been so examined have been examined in the cellar, and, in some cases, disease has been traced to the animal upstairs after being dressed and hung up. During the three months, there have been killed 9,451 cattle, 7,630 calves, and 128,488 sheep. Five animals have been brought to the slaughter-house in the ambulance, and have received careful examination before and during dressing. All dead cattle have been examined on their arrival, and the history and disposition of the remaining animals of the same drove looked into.

I have made it a special point rigidly to inspect all cows coming to be slaughtered. During the corresponding three months of past years, it has been a practice to dress poor cows for canning purposes, and an average of 175 cows a week were dressed; but this work has not been carried on to any extent this season.

The following is a list of the diseases discovered during the three months: —

Tuberculosis	12
Actinomycosis	6
Cancer	1

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Texas fever	3
Perinephritic abscess	1
Enteritis	2
Abscess of liver	19

Number of animals and parts of animals condemned: —

Cattle	5
Calves	4
Sheep	4
Livers	22

In all amounting to —

Beef	3,107 lbs.
Veal	125 "
Mutton	120 "

The diseases among the above condemned animals were: —

Tuberculosis	2
Perinephritic abscess	1
Pylephlebitis	1
Texas fever	1

From the above it will be seen that not all of the tuberculous animals have been condemned; and I wish to state that our discrimination might be more rigid were it not for the fact that, in surrounding cities and towns, dissatisfied tenants could slaughter without inspection for our market, and thus defeat the object of our inspection.

The method of collecting blood, to be used in preparing patented fluid food, is not free from objection; and if the practice is to be continued, I would recommend that greater precautions be taken to avoid the admixture of extraneous matters. I also recommend the adoption of a few new rules, among which are: —

1st. The Inspector shall have the right to order the detention of any suspicious animal for a reasonable length of time, for observation.

2d. He shall be allowed to take small portions of any

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apparently diseased organ or carcass for experimental purposes.

3d. All lungs should be hung in a suitable place, in the same order as their corresponding carcasses, for inspection.

Owing to the good work of the Superintendent, Mr. Judson, the premises of the Abattoir are in the best sanitary condition, and there have been no complaints during my service.

I take this opportunity to sincerely thank Drs. Lyman and Bryden for the suggestions and advice which they have kindly given me. And I am under special obligations to Dr. William F. Whitney, of the Harvard Medical School, under whose direction all microscopic work has been carried out, and whose suggestions and aid have been of great value to me.

Respectfully submitted,

ALEXANDER BURR, M.D.V.,
Inspector.

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REPORT ON THE DISEASES FOUND AMONG THE ANIMALS SLAUGHTERED AT THE BRIGHTON ABATTOIR, FROM OCT. 1, 1889, TO JAN. 1, 1890.

By William F. Whitney, M.D.

To the Board of Health of the City of Boston : —

Gentlemen, — I have the honor to report that, in accordance with your request, I have examined, with Dr. Burr, the specimens brought by him from the cases mentioned in his report, and have confirmed the diagnosis, chiefly by microscopic examination. Even in the short time that such systematic examination has been carried on, much of general interest has been found, with a promise of greater extension in the future. The facts thus obtained can be generalized as follows : —

Actinomycosis.

This disease, which is generally known among the stockmen as "lump-jaw," usually has its seat in the lower jaw, and when it reaches a considerable size interferes with chewing to such an extent as to markedly affect the condition of the animals. Such do not find their way into the best houses, and therefore the number reported, six in all, shows fairly the average occurrence in ten thousand well-selected animals. The disease is, however, not alone confined to the mouth, but may involve the internal organs, either primarily or in connection with that of the jaw. In two such cases the lesions were found in the lungs alone, and the diagnosis was made by finding, under the microscope, masses of the characteristically shaped ray fungus (actinomyces) from whence the disease derives its name. In one of the cases it was present as a small, dense nodule in the lung, in which were soft but gritty spots, the contents of which were made up of

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fatty detritus, and extensively calcified masses of the fungus. It is highly probable that such a nodule represents an arrested stage of the disease, and was of but little harm to the animal.

The second case was evidently an active one. In this there were numerous quite large abscesses, occupying a large part of one of the lobes. These were separated by bands of connective tissue, containing numerous minute holes filled with a yellowish puriform material. The pus contained in the larger cavities was quite different in character from that found after ordinary suppuration, or that accompanying tuberculosis. It was extremely viscid, and, when lifted up on the point of a knife, did not wet or cling to the blade, but hung together in tenacious strings. This peculiarity at once aroused the suspicion that it was something extraordinary, and the microscope showed a large number of the fungous masses in every drop. Although cases of this disease have been reported in man, they are rare, and, as far as known, none have occurred in this immediate vicinity in the ten years that have elapsed since the attention of the medical profession has been generally directed to the subject. In one case a tongue containing nodules was destroyed; but no animal was condemned, as nothing has shown, as yet, that the disease can be transmitted through the meat, and this, after dressing, gave no evidence that it was unfit for food.

ABSCESS OF THE LIVER.

This was found the most frequently of any single trouble,—nineteen times in the ten thousand animals slaughtered. The histological examinations showed it to be associated with an inflammation of the portal vein (pylephlebitis), but whether primarily or secondarily has not been fully determined as yet, and will be a subject for future investigation. These abscesses were, in general, of small size; but one was of especial interest, as not only had it destroyed the greater part of the liver, but had pushed upon into the chest and somewhat involved the lung. In spite of this the animal was reported in prime condition, and when dressed weighed over

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eight hundred pounds. The wall of the abscess was made up of very dense connective tissue, apparently shutting it off from the neighboring parts. The pus itself was extremely offensive, and was found loaded with large colonies of micrococci. An experiment made by the Inspector seemed to show that the meat from this animal underwent putrefaction a little more rapidly than that from a sound animal killed at the same time and left under the same conditions. All such livers were condemned, but whether the meat from such cases should be taken is a question that must be decided in the future.

CANCER.

The occurrence of cancer among the larger barn-yard animals is regarded by all authorities as rare. A case, therefore, which presents, as far as known, an undescribed variety of this disease among animals, and at the same time has such appearances as would warrant any one in inferring the presence of tuberculosis, deserves more than a passing notice.

The case referred to had lesions in the lungs, the costal pleura, and the pericardial fat tissue.

The portion of lung seen consisted of the greater part of one of the lobes. The pleural surface was studded with rounded, slightly-raised, yellowish masses, varying from the size of a pin's head to a ten-cent piece, and from the free edge hung a fringe of rounded, lobulated, often heart or kidney shaped nodules the size of large beans. The section surface of one of these was homogeneous, slightly translucent, and of a light-orange color. Nowhere was there any evidence of calcareous infiltration or cheesy degeneration, and it was this that pointed to the probable absence of tuberculosis. The similarity in general appearance to a case of so-called "grapes" (nodular tuberculosis of a serous surface) will be seen on comparing Plates I. and II. The costal pleura was thickened, roughened, and infiltrated with the same yellowish, slightly transparent tissue. The fat tissue about the pericardium was traversed by broad bands of the

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PLATE I.

A portion of the omentum from a cow covered with nodules of tuberculosis. ("grapes")

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PLATE II.

A portion of the lung showing nodules of malignant adenoma covering the pleura and hanging from the edges.

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Plate II.

Malignant Adenoma.

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new growth alternating with the normal white fat tissue. The microscopic examination showed an identical structure of the growth in the three places. This was an alveolated arrangement of connective tissue, the spaces of which were lined with a cubical epithelium, leaving a distinct opening in the centre. In other words, it seemed a perfect reproduction of gland tissue. Here and there the spaces were more completely filled, and spots could be picked out where it more nearly resembled the ordinary type of cancer. In general, however, it seemed more closely allied to the adenomata, while from its power of generalizing it must be regarded as malignant. The name of "malignant adenoma," applied to such growths when found in the human body, seems perfectly justified here; and, as before stated, this particular form is not known to have been described as occurring in neat cattle. Unfortunately, the other organs of the body could not be identified, so that the primary seat must still be a matter of doubt. The stomach or liver is the most probable.

TUBERCULOSIS.

Of the diseases which affect animals in respect to their use as food for man, tuberculosis is the most important.

When it is remembered that from one-tenth to one-fifth of the deaths, from all causes, of the human race can be ascribed to this disease in some of its varied manifestations, and when, further, it has been shown to be highly infectious, and this property has been found to be dependent upon a well-characterized bacillus, identical in its action, whether obtained from animals or man, then the possibility of the infection of the latter from the former, under certain conditions, is rendered highly probable.

Experiments, made all over the world, by the direct inoculation of the material coming from the most varied lesions, leave no doubt that the disease can be transmitted in that way.

But the question with which we have to deal is, whether the flesh of animals affected with tuberculosis is dangerous

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as an article of food. An answer can be found from a careful study of the facts presented at the International Congress for the Study of Tuberculosis, held at Paris, 1888.[1] From this it appears—

1. That it is dangerous.
2. But not greatly so.

The experiments upon which this conclusion is based show that the juice extracted from the flesh of tuberculous cattle was capable of reproducing the diseases, when inoculated into susceptible animals. A scientifically perfect experiment is as yet wanting to show that the meat of such animals, when eaten by man, has produced the disease. But there are cases scattered through literature which seem to point in that direction. With properly cooked meat, in a perfectly healthy man, the chances are very slight; but it is the weaker members of the community, women and children, who, from a deficient action of the gastric juice, or from hereditary predisposition, are especially susceptible to this disease, who are entitled to every protection that a careful supervision can afford.

The question as to the exact amount of danger is one that, it seems, must be definitely settled within a few years, now that so much attention is being given to it by the ablest men in every part of the globe. While the subject may still be considered as under judgment, therefore, we should recommend the total seizure of every animal in which any lesions of tuberculosis, no matter how slight, are found. And for the animals thus taken, when the lesions did not involve, at most, a quarter of any one of the important viscera, or were not generalized in the great serous cavities, the owners should receive indemnity from the city. When the lesions were more extensive than that mentioned above, no indemnity should be paid. And to aid in carrying out this, the lungs should be kept with the carcass to which they belong, until seen by the Inspector.

Among the ten thousand animals killed from October to

[1] Congrès pour l'Étude de la Tuberculosis chez l'Homme et chez les Animaux. Contes rendus et Memoires. Paris, G. Masson, 1889.

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January, there were found twelve cases of tuberculosis, among which were only two where the lesions were very extensive. Taking this as a basis, it would cost the city from $1,600 to $2,000 per year for indemnity.

This may be considered as erring on the side of oversafety; but the cause of humanity demands that every step should be taken in the interests of preventive medicine, for this is the only path along which any real gain in lengthening human life can be claimed by medical science.

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